# Level up: The dynamic nature of leadership and management

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## Dedication

This thesis is dedicated to all those who put in the hours, days, and years into building their careers and achieving their goals.

**Abstract**

Organizations are broken into hierarchical levels of management and the nature of work changes as one ascends the hierarchy. There are several theoretical discussions and studies on how work changes by management level. The current investigation reviewed the literature on differences along the organizational hierarchy and compared levels on how the people in them differ, examining differences in personality, cognitive ability, experiences, and 360-degree feedback. A large, archival dataset was acquired from a large consulting firm consisting of over 4000 managers in three levels of management: supervisory, middle, and executive. Comparisons of levels were conducted on mean scores, rank order of scores on 360-degree feedback measures, correlations with performance criteria, and regression equations. Analyses revealed several mean differences between levels across factors of personality, ratings of competence in 360-degree feedback, experiences, and performance. Correlations with performance differed across levels as well as personality regression equations controlling for cognitive ability. A test of moderation found that level does not moderate relationships with performance though further research should be conducted. Overall, the results show significant differences between levels of management across a multitude of variables. Implications for selection and development are discussed.

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*There is nothing more difficult to take in hand, more perilous to conduct, or more uncertain in its success, than to take the lead in the introduction of a new order of things.*

*-Niccolò Machiavelli, 1513*

## Introduction

Leadership is, and has been, one of the most difficult and important issues that human society has faced throughout history, influencing the rise and fall of cities, armies, nations, and organizations. It is humanity's answer to the problem of group coordination, of reaching a consensus on what to do, when and where to do it (King, Johnson, & Van Vugt, 2009; Van Vugt, 2006; Van Vugt, Hogan, & Kaiser, 2008). Leadership, therefore, is the key to organizational effectiveness and affects the well-being of employees in organizations and the citizens of nations (Hogan & Kaiser, 2005). Good leadership fosters prosperity, those within its sphere of influence experiencing benefits beyond those outside of it, while bad leadership can destroy, bringing misery to those subjected to it. Leadership, however, is not necessarily a static process in terms of the specific functions and behaviors required as these can change drastically when the goals of an organization or the nature of work changes (e.g. promotion; Campbell, 2012a). Katz and Kahn (1978), among many others, specifically discuss how leadership and management functions change as one ascends the organizational hierarchy.

The overall objectives of this dissertation are to identify individual differences that predict performance within an organizational leadership level, the mean differences

in these key predictors across levels, and how the importance of those predictors change between levels. In other words, it is investigating whether the primary determinants of performance vary depending on organizational level. The current research literature on this issue is largely job analytic, focusing on job requirements and differences in tasks and skills while little has been done on the underlying individual traits or behaviors differentiating the leadership levels (Kaiser, 2011). Understanding the individual difference variables important to performance at each level will help organizations in identifying potential future leaders, in selecting new leaders, and in guiding leader development. Through extensive analyses of personality, cognitive ability, developmental experiences, and behavior ratings of performance requirements (360-degree feedback), this study will examine how differences within and between levels differentially predict performance. Identifying these differences will provide guidelines for organizations to identify and train employees into more effective leaders.

**Defining Leadership**

Understanding leadership first begins with defining what "leadership" means. This has been a difficult concept for people to agree upon: "there are almost as many different definitions of leadership as there are persons who have attempted to define the concept" (Bass, 1990; p. 11). As Bennis (1959) observed, it is a slippery and exceedingly complex concept, having been defined in terms of traits, behaviors, influence, interaction patterns, role relationships, and occupation of an administrative position (Bass, 1990;

Yukl, 2009). The complexity stems from leadership involving multiple components: the leader, the followers, and the situation. A few of the definitions from the literature are:

*The process by which an agent induces a subordinate to behave in a desired manner (Bennis, 1959).*

*Directing and coordinating the work of group members (Fiedler, 1967).*

*An interpersonal relation in which others comply because they want to, not because they have to (Merton, 1969).*

*The process of influencing an organized group toward accomplishing its goals (Roach & Behling, 1984).*

*Leadership is an interaction between two or more members of a group that often involves a structuring or restructuring of the situation and the perceptions and expectations of the members (Bass, 1990).*

*Actions that focus resources to create desirable opportunities (Campbell, 1991).*

*Leadership is that process in which one person sets the purpose or direction for one or more other persons, and gets them to move along together with him or her and with each other in that direction with competence and full commitment (Jaques & Clement, 1991).*

*Leadership primarily concerns building and maintaining effective teams: persuading people to give up, for a while, their selfish pursuits and pursue a common goal (Hogan & Kaiser, 2005).*

> *Leadership is the process of influencing people by providing purpose, direction, and motivation while operating to accomplish the mission and improve the organization (United States, 2006).*
>
> *Leadership is the process of influencing others to understand and agree about what needs to be done and how to do it, and the process of facilitating individual and collective efforts to accomplish shared objectives (Yukl, 2009).*
>
> *Leadership involves direct interpersonal influence. That is, actions taken in the name of leadership attempt to influence the behavior of other people such that their performance is enhanced, both individually and collectively…direct interpersonal influence is, by definition, the domain of "leadership" (Campbell, 2012a).*

As can be seen by the definitions, they differ in several ways and result in various approaches to studying leadership. For example, Merton's definition may exclude leaders in the military who have more power and authority inherent in their positions; followers may "have to" comply. Though they may differ in certain aspects, most definitions agree that leadership is the process of influencing a group or team of people (two or more) to understand, agree to, and work towards a common purpose or goal. This definition allows for any individual in any role to exercise leadership though it is not necessary for success in every role. This is an important distinction to make, that leadership is not limited to people in certain roles or positions, but is rather the process of influencing others which can be exercised by any person in any role. This means any

individual at any level of an organization can be a leader if they are using interpersonal influence to engage others towards a common goal.

Another process that closely coincides with and typically complements leadership is management. "As distinct from leadership, management involves activities that best use (i.e., manage) the organization's resources to achieve its goals" (Campbell, 2012a, p. 403). It involves cognitive and communicative processes to influence others but by definition, does not rely on interpersonal influence. Though the two processes are distinct and can be used by any person in any given role, they are often both the responsibility of a single individual, usually labeled supervisor, manager, or executive (Campbell, 2012a). For example, management, as a role, often requires some measure of leadership to be effective: a manager has subordinates that he or she is responsible for assigning tasks to and ensuring those tasks are done in a manner as to help with the achievement of organizational goals. Campbell (2012a) specifically distinguishes between leadership and management on their performance dimensions – the specific functions that compose leadership or management processes. These are detailed in Table 1. Throughout this paper, the terms leader and manager will be used to describe those in formal management roles and who exercise the processes of leadership and/or management.

**Impact of Leadership**

Though the impact of leadership on meaningful outcomes has been questioned (Meindl, Ehrlich, & Dukerich, 1985), research in the last twenty to thirty years

underscores its importance for organizational success (Hogan & Kaiser, 2005; Kaiser, Hogan, & Craig, 2008). Estimates of executive and managerial effect, beyond other environmental and organizational influences, range from 15% (Barrick, Day, Lord, & Alexander, 1991; Nohria, Joyce, & Roberson, 2003) to 45% (Day & Lord, 1988) of the variance in relevant organizational outcomes. For comparison, the effect the industry within which the company operates accounts for roughly 15% (Nohria et al., 2003) to 19% (McGahan & Porter, 1997) of the variance in organizational outcomes. Specifically, CEO's and managers impact investment, financial, and organizational practices (Bertrand and Schoar, 2003) and organizational management practices from supervisors to executives are significantly associated with productivity, profitability, sales growth rates, and firm-survival rates (Bloom and Van Reenan, 2007; 2010). Barrick et al. (1991) calculate that this leadership effect translates into a financial impact of an additional $25 million in value for organizations with effective leaders. Adjusting for inflation, the U.S. Bureau of Labor Statistics calculates that $25 million in 1991 is roughly equivalent to $42.5 million in 2013. In extensive longitudinal analyses of hundreds of companies, Collins (2001) and Nohria et al. (2003) both found leadership to be one of the essential characteristics of organizations that consistently outperformed competitors.

With such a large effect on organizational performance, it is imperative for companies to practice effective leadership. Unfortunately, estimates put manager derailment, when previously valued employees cease to be successful and are either fired, demoted, or stalled in their career, between 30% to 67% with an average of 50% (Hogan, Hogan, & Kaiser, 2010). This high failure rate among managers represents a significant

cost to the company in financial and moral consequences. Financially, not only does the organization miss the value provided by effective leadership, but it incurs the cost of failed leadership, estimated between $500,000 (Lombardo, Ruderman, & McCauley, 1988) to $2.7 million (Smart, 1999) per senior leader. In addition to the observable costs of poor management, there are also hidden losses in "golden parachutes," lost intellectual and social capital, missed business objectives, and disengaged employees (Hogan et al., 2010). Beyond financial losses, derailment can have moral implications. Hogan and Kaiser (2005) discuss the case of Foday Sankoh, former dictator of Sierra Leone. He overthrew the Sierra Leonean government, promising reform in many public services and a redistribution of diamond revenues. Instead, he bought arms and political support, and lead an army that was notoriously savage, looting and cannibalizing victims and often requiring new recruits to kill their own parents to harden them. By the time the United Nations stepped in, it was considered the poorest country on earth. With the drastic financial and moral costs of failed leadership, it is critical for organizations to identify the reasons for derailment and develop systems to prevent it and promote effective leadership.

It has been observed that the majority of derailment among managers happens after a transition into a higher-level role (Hogan et al., 2010; Watkins, 2003) leading McCall & Lombardo (1983) to conclude the causes of derailment "are all connected to the fact that situations change as one ascends the organizational hierarchy" (p. 11). Job demands differ in type and quality between levels of the hierarchy: what was successful at a lower level may be inadequate or even detrimental at a higher level or what was

unimportant at a lower level may be critical for success later (McCall & Lombardo, 1983). Coming to this realization can cause stress or threaten an individual's sense of coherence and well-being, especially during transitions when managers often doubt their ability to learn and adapt to the functions of the new role (Freedman, 1998; 2005). It can take managers up to six months to become adequately proficient in a new role; they typically are forced to rely on trial and error experiences as most organizations do not prepare or support managers during transitions (Freedman, 1998; 2005; Hogan et al., 2010; Watkins, 2003). Estimates from the Center for Creative Leadership (Ciampa, 2005) and Manchester Inc. (Vollhardt, 2005) place manager and executive failure at 40% within the first 18 months of attaining the position. As noted above, the costs of failure can be quite large, making it imperative for organizations to reduce the risks and maximize the benefits of transitioning employees into their new roles.

Transitions between levels and how job requirements differ between organizational levels is often referred to as the "leadership pipeline," popularized by the book of the same name detailing General Electric (GE) Company's leadership development (Charan, Drotter, & Noel, 2001). Despite its popularity and that of similar books in the business literature such as *What Got You Here Won't Get You There* (Goldsmith & Reiter, 2007), these treatments largely ignore the relevant research literature failing to use any data, formal theory, or empirical tests of their assumptions (Kaiser, Craig, Overfield, & Yarborough, 2011). With the importance attached to leader success for organizations and the role differences across hierarchical levels play in transitions between levels, it is beneficial to have and understand evidence for what the

differences are and how to leverage those differences into developing and promoting more effective leaders.

## Literature Review

There is an extensive empirical literature detailing the differences between leadership roles in regards to the job requirements and tasks therein across the organizational hierarchy. Two avenues of research provide the framework for understanding and identifying distinct leadership levels (Kaiser et al, 2011). The first is the theoretical basis that organizations are complex, multilevel systems requiring a multitude of roles and levels in order to function effectively. The theory postulates the requirements of jobs are similar within a given organizational level but are qualitatively different between levels (e.g. Hunt, 1991; Jaques, 1989; Katz & Kahn, 1978; Zaccaro, 2001). The second avenue takes a job analysis focus where studies have observed and questioned managers and leaders across organizational levels about the tasks on which they spend their time and on what they consider important for effective performance (e.g. Kraut, Pedigo, McKenna, & Dunnette, 1989; Luthans, Rosenkrantz, & Hennessey, 1985; Tornow & Pinto, 1976). This research details the tasks and job requirements of the various leadership levels.

From these two approaches to understanding the organizational hierarchy, the literature is organized into four main sections with several subsections. First, the theory behind organizational hierarchies is discussed, detailing the number of levels that have the strongest differentiation and the main reasons for that differentiation. The second part

addresses the job analytic aspect of the research literature, reviewing studies examining differences between levels on performance requirements, skills, organizational responsibilities, and individual trait differences. The third part discusses Freedman's (1998; 2005; 2011) theory on transitions between levels where individuals must decide what behaviors and skills to "Add, Keep, and Let Go" to be effective in their new role. Finally, the overall literature on leadership is discussed, specifically the main determinants of leadership performance to offer background into what variables are important to examine in analysis of differences between levels.

**Theory**

"The more general postulate that underlies our concern for the horizontal (functional) and the vertical (hierarchical) dimensions of organization is that one's position in organizational space is a powerful determinant of perceptions, attitudes, motivation, and behavior" (Katz & Kahn, 1978, p. 78). The hierarchical nature of organizations also "has profound effects on the personal, interpersonal, and organizational choices that can be made, as well as the import that a given choice might have" – a CEO's decision or preference on an organizational issue is regarded very differently from a middle manager's (Zaccaro, 2002, p. 12). Unfortunately, organizational level has been largely ignored in most leadership models. In their review of executive leadership research, Day and Lord (1988) conclude that a major problem in leadership research is the issue of confusing levels or units of analysis: empirical findings at lower levels may not apply to higher levels due to qualitative differences in leadership

at different levels – each level has different goals and meets different organizational needs. For example, a supervisor of a production team encounters very different issues on a daily basis than an executive, and effective influence tactics can differ greatly based on the inherent power in a position and in the positions of direct reports. Assuming "construct isomorphism," that leadership remains the same across organizational levels, that a supervisor and executive engage in the same leadership behaviors and activities to be effective, may keep researchers from developing more appropriate perspectives based on the level of analysis. As Zaccaro (2001) states, "understanding organizational leadership requires a model that specifies how performance demands change qualitatively at particular points in the organizational structure," meaning it is useful to identify the main points along the organizational hierarchy when effective and productive behaviors and activities are no longer helpful and new behaviors and activities need to be learned or adopted (p. 26).

**Levels of leadership.** Though the number of levels in any given organization differs, current theory and research summarizes them into three major levels where the nature of work in managerial roles is distinctly different as a result of differing organizational needs at each level (Hunt, 1991; Jacobs & Jaques, 1987; Katz & Kahn, 1978; United States, 2006; Zaccaro, 2001). These three levels of managerial and leadership behavior require different perspectives, objective time frames, performance requirements, types of knowledge, and individual characteristics to be successful. The levels are differentiated based on the complexity of the work required by the jobs within versus between a level; each successive level corresponds to more complex requirements,

environments, and processes with longer time contexts (Jaques, 1989). In general, as one moves up the organizational hierarchy, the degree to which one can supplement and change the existing organizational policies and structure increases as well as the types of actions available to implement, interpret, and direct the organization in the accomplishment of its objectives (Katz & Kahn, 1978). Different theories refer to the levels by different names, but in general they correspond to 1) supervisory or first-line management; 2) middle management; and 3) upper management or executives.

***Supervisory.*** The lowest leadership level, supervisory roles, is characterized by more direct or small-group interactions, concrete and well-specified tasks, and relatively shorter time frames (1 day to 2 years). It is typically the point where managers first have responsibility for the work of others and involves using and applying already established rules and policies to influence others in maintaining functioning and effective organizational procedures. The existing organizational policies and structure provide guidance with little role ambiguity and are used to address and solve problems or disruptions to the successful management of operations. While balancing immediate production demands with future resource requirements, managers typically need to anticipate problems, meet basic personnel development needs, and plan implementation for strategies and policies established by upper levels. Tasks focus on the use of technical knowledge; understanding organizational rules, policies, and procedures; and fair use of coercive and reward power. Extensive technical know-how of the job allows managers to make effective decisions regarding the use of personnel and resources. Through an understanding of organizational procedures, managers at this level need to

ensure the equitable and consistent application of rules, policies, rewards, and punishments. However, they also need to understand the context of the situation and take into account the larger organizational framework and impact on functionality rather than just literal interpretations of every rule or policy. Though leadership at this level can be irrelevant due to routine directives and compliance, "the utilization of existing rules and regulations for exercising influence is never wholly mechanical" and there remains human interaction and judgment in the consistency and appropriateness in which one acts and assumes the role of a supervisor or first-line manager (Katz & Kahn, 1978, p. 557).

***Middle management.*** The middle management level requires developing methods for implementing, elaborating, and expanding upon exiting policies and structure to reach organizational goals. Managers at this level must interpret, explain, and utilize the organizational structure and policies in ways which optimize organizational functioning, often guiding subordinates to do so as well. Typically working in time spans from 2 to 10 years, middle managers improvise and piece out the incompleteness of existing formal structures within the organization as they are given organizational objectives without guidance on the route to their achievement. They do this by establishing production goals, strategies, and time frames to be implemented by others while coordinating the demands and activities of multiple subsystems, units, or departments. This requires balancing two main components: an internal versus external perspective and managing relationships with both superiors and subordinates. Middle management needs to understand the environment and its affect on organizational strategy and effectiveness while also understanding the function of subsystems within the

organization and their contribution to its overall success. By understanding the interconnections within the organization and the environment, they are able to maximize where and how resources are invested to achieve organizational objectives. In managing relationships up and down the hierarchy, mid-level managers must recognize the degree of freedom they are accorded by superiors while understanding how their subordinates will react to their interpretations, elaborations, and implementations of policy. If they wish to accomplish their objectives, they need the ideas and efforts of those below them, while their freedom from superiors to manipulate policies and structure depends on their ability to maintain productivity and avoid organizational embarrassment.

***Executive.*** The highest leadership level, upper management and executive roles, involves the creation or reformulation of organization structure and policies, requiring time frames for work of 5-10 years and beyond. Katz and Kahn (1978) deem these the most difficult of organizational tasks, partly due to their rarity – change or reformulation in an organization typically only occurs from outside pressures such as market changes and competition. This requires an emphasis on a systemic perspective to identify if and when change would be beneficial, when and where to create new business units, and when and how to acquire the necessary resources to grow and sustain the organization. This perspective requires an understanding and sensitivity to the environment and its influence on the organization: how changes and trends in the environment affect the success or failure of the organization, predicting the probable effects of various courses of action, and choosing the best option among them. It also requires an internal perspective: the understanding, coordination, and control of organizational systems and

subsystems and the people involved where each has different needs and motivations. Beyond a systemic perspective, leaders at this level must also implement new policies and strategies for the organization as a whole, create or change organizational culture and climate to support the implementation, and establish the organizational values and vision. Katz and Kahn (1978) argue this requires some measure of charisma to generate the necessary support and effort for the policies they change or implement. Charisma here is not an objective assessment of a leader's ability to meet specific needs, but rather a trust in the leader to realistically identify people's needs and formulate clear plans for reaching them. This trust that the leader can identify the needs or goals of others and create strategies to achieve them results in followers' commitment and willingness to execute the strategies.

***Summary of the three levels.*** Each level has distinct functions and requirements to be effective: lower levels focus on technical and production issues; the middle levels on a balance between monitoring the external environment and coordinating multiple units; and the top levels focus on identifying changes or opportunities in the external environment and formulating organizational strategy and policy. Following theory (i.e. Hunt, 1991; Jaques, 1989; Katz & Kahn, 1978) and their own research, the US Army defines leadership differently based on organizational level: at junior levels (supervisory), leadership is defined as influencing others to accomplish the mission through purpose, direction, and motivation; at the middle level it is defined as an influence process using direct and indirect means to create conditions for the continued success of the organization; and at the highest levels (executives) as obtaining the commitment of

subordinates to the purposes and goals of the organization beyond the authority inherent in the position (Hedlund, Sternberg, Horvath, Forsythe, & Snook, 1999; United States, 2006). Though it may be useful for any specific organization to make finer distinctions, these three general levels provide a basic conceptual framework for examining the research literature to determine differences along the organizational hierarchy. Throughout the paper, they will be referred to as bottom (first-line management or supervisory roles), middle (middle management), and top (upper management or executives).

**Complexity.** Theories and research on differentiating levels of management rest on the assumption that the nature of work increases in complexity as one moves up the hierarchy, where complexity is defined in terms of the number, ambiguity, rate of change, and interweaving of variables involved in a problem (Jaques & Clement, 1991). Adding to this, Ashby's (1952) principle of requisite variety states the variety, or complexity, of an individual or object performing an action must be as great as or greater than the variety or complexity of the action. Research by Wilk, Desmarais, and Sackett (1995) and Wilk and Sackett (1996) support Ashby's (1952) theory that people should match the complexity of their work: they find that workers gravitate to occupations commensurate with their level of ability. Specifically, they find a worker will either move into more or less complex jobs to match his or her level of cognitive ability. Under the assumption that roles higher up in an organization are more complex, a leader's or manager's role requires increasingly more complex cognitive processes, social differentiation and integration, and behavioral repertoires in order to be effective (Hooijberg, Hunt, &

Dodge, 1997; Zaccaro, 2001). For example, as people move up the hierarchy, the impact of decisions and number of groups or organizational units a leader or manager are responsible for increases, meaning they have to account for more people and variables when solving organizational problems (Mumford, Zaccaro, Harding, Fleishman, and Reiter-Palmon, 2000). These problems also become more ill-defined, abstract, and are more likely to be affected by environmental influences, further requiring more complex methods of information processing and influence. Following Ashby's (1952) theory and the results of Wilk et al (1995) and Wilk and Sackett (1996), this means that as the job becomes more complex the higher along the hierarchy it is, the leaders and managers with higher cognitive abilities will move into those roles in order to match their cognitive ability to the complexity of the job.

Two theories, stratified systems theory (SST; Jacobs & Jaques, 1987) and interactive complexity theory (ICT; Streufert & Swezey, 1986), examine cognitive complexity and how it changes across time and organizational levels. In SST, complexity is examined through cognitive processes and tasks, which are largely defined by the time horizon required for their completion, and discussed in terms of a "causal map" (Jacobs & Jaques, 1987; Jaques, 1989; Jaques & Clement, 1991). ICT focuses on the complexity of the structure of information processing, specifically the interaction of individual differences with environmental conditions. Though SST examines the complexity of cognitive processes and tasks and ICT focuses on the way information is processed, they both argue that an individual needs an increased cognitive complexity to handle increasing complex situations.

***Stratified Systems Theory.*** Jacobs and Jaques (1987) argue that a leader's ability to handle a situation relies on their causal map: "a cognitive representation of the elements and events that comprise the operational environment within which leadership occurs" (Zaccaro, 2001; p. 25). The causal map is a leader or manager's frame of reference for a situation. This map or frame of reference provides the basis for a leader's understanding and interpretation of the environment, situation, events, and actions being taken and the various relationships and interactions between these elements. A leader or manager's actions, and subsequently their effectiveness, therefore largely depend on their causal map – their interpretations of the situations and the interplay of the variables involved. Following Ashby's (1952) principle of requisite theory, a leader's causal map must match the complexity of the environment in which he or she is operating, meaning the complexity of the causal map must also increase in response to the increase in complexity as one moves up the organizational hierarchy. Differences in the causal maps between organizational levels occurs because as a manager moves up the hierarchy, they must 1) accommodate more and more causal elements and variables influencing their work; 2) the interconnections and relationships between the elements become more complex; 3) the number of causal chains and their interactions increases, requiring both the ability to differentiate between them and integrate them into an understanding of what is happening and what needs to be done; 4) events occur over longer and longer time frames, increasing the difficulty of identifying all the elements involved and integrating them into the causal map; and 5) it is necessary to factor in more and more external influences such as the strategies of competitors (Jacobs & Jaques, 1987; Zaccaro, 2001).

In their analysis of organizational levels, Jacobs and Jaques (1987) found the time frame managers worked under highly corresponded to the complexity of their work. In SST then, the maximum complexity of a role, such as that of a manager at a particular leadership level, can be measured by the time-span of the role (Jaques & Clement, 1991). Time-span refers to the fact that work is comprised of tasks and when a task is assigned, it has a target completion time: the maximum time allotted for the person to complete it. Therefore, the time span of a role is that of the longest task because that is the time in which all other tasks must be planned. Using time-span to differentiate organizational levels, Jacobs and Jaques (1987) argue there are a series of distinct steps or changes in time-span corresponding to changes in the complexity of tasks and cognitive processes. Their analyses result in seven levels sorted into the three domains described above. As noted previously, the bottom level corresponds to tasks with time spans of one day to a couple years, the middle level corresponds to anywhere from a couple years to around ten years, and the top level corresponds to ten years and beyond. These time spans only represent the maximum horizon for potential tasks in each role, not the horizon for a typical task within a role (Jacobs & Jaques, 1987).

***Interactive Complexity Theory.*** Although ICT does not specifically stratify organizational work like SST, it does elaborate on differences between lower and upper organizational levels. ICT follows the same basic argument as SST with Ashby's (1952) principle of requisite variety but defined in relation to the environment: the success of an individual in an organization occurs when their cognitive complexity is equivalent to the complexity of the organization or environment (Streufert & Swezey, 1986). To

differentiate organizational levels, Streufert and Swezey (1986) focus on four main components. The first is information load: the amount of information flowing into an organization as well as the information exchanges within and between the units or departments of the organization. Higher levels in the organization must differentiate and integrate more sources of information, external and internal, than lower levels. Second, as managers move up the hierarchy, they become responsible for the levels below them; they need to understand, differentiate, and integrate each level's needs, demands, and climates effectively with each other and into the organization as a whole. The third component is that lower levels tend to have only one, maybe two, main objectives such as maximizing product output and personnel development. Higher levels however, typically have multiple operative goals focused on several factors such as profit, investments, organizational change initiatives, and industry positioning relative to competitors. These goals at higher levels are more long-term while the lower levels tend to be more short-term, reinforcing Jacobs and Jaques (1987) notion of time-span as a differentiator of complexity and levels of the organization. The fourth component of organizational complexity in ICT looks at the degree and nature of change occurring in and around the organization's external environment along with how quickly and often it occurs. Since higher levels have to account for more and more external factors moving up the hierarchy, managers at these levels need to be able to handle the subsequent complexity of the environment. Taken together, these four components show how information processing increases in complexity the higher up in the organizational hierarchy one moves.

Combining the ICT and SST, the largest differences in complexity occur at two distinct points: between bottom and middle management and between middle and top management. These increases in complexity between the three levels have powerful implications for the behaviors and skills required to be effective and the type of activities necessary for success at each level.

## Job Analytic Approach

Empirical research of differences between management levels in organizations has found the strongest distinctions between the three levels: bottom, middle, and top management (Zaccaro, 2001). Using job analytic approaches (i.e. asking managers at various levels what they do or feel is important, or observing what they actually do), research has examined how the performance requirements, skills, organizational responsibilities, and traits differ across the organizational hierarchy.

**Performance requirements.** Performance requirements are what managers generally do on the job that relate to leadership and managerial effectiveness and success: what the job requirements are, what tasks and assignments consist of, with whom they are interacting and communicating, and the behaviors they use to complete tasks and accomplish goals. Across the three levels of the organizational hierarchy the specific activities and behaviors carried out change substantively, "with higher level jobs requiring larger numbers of discrete tasks that are also more varied and less well defined (i.e. greater complexity)" (Kaiser et al., 2011, p. 80). This has long been argued in the situational stream of leadership research, where it is stated that effectiveness depends on

using the right behaviors for the situation (Fieldler, 1970; House, 1996; Vroom & Jago, 2007). Directing and controlling the work of subordinates at lower levels requires different tasks and behaviors than the upward and downward communication and multiple unit coordination of middle management, which in turn requires different tasks and behaviors than the top level strategists. These changes in performance requirements often require significant adaptation and can be very difficult for leaders moving up the organizational hierarchy (Freedman, 1998; 2005; Kates & Downey, 2005). As mentioned earlier, failure to adapt to a new level often results in derailment and is usually not a function of not being able to do the tasks but rather in still doing the tasks of the previous role or in applying old behaviors or methods that worked at lower levels to new issues at higher levels where they are no longer effective.

***Bottom management.*** Beginning at the bottom, performance requirements center around direct interpersonal influence and monitoring and directing performance. The adaptation to now being in charge of subordinates, often former peers, and the first time as not solely an individual contributor requires bottom level managers to employ a more directive and less supportive approach to leading and managing others compared to higher levels (Kaiser & Craig, 2011). Compared to the other levels, managers at the bottom level control and organize more of the work of their subordinates, using face-to-face interaction to ensure work is done efficiently and subordinates are used effectively (Gomez-Mejia, McCann, & Page, 1985; Kraut et al, 1989; Mahoney, Jerdee, & Carroll, 1965; Tornow & Pinto, 1976). This approach largely reflects the Initiating Structure behaviors identified in the Ohio State and Michigan studies (Bowers & Seashore, 1966;

Fleishman, 1953; Judge, Piccolo, & Ilies, 2004). They manage subordinate performance through close monitoring of their activities and performance metrics, inspecting work, providing feedback, and instructing subordinates through training, coaching, and instruction on their job or tasks (Kraut et al, 1989; Luthans et al, 1985; Tornow & Pinto, 1976). As supervisors direct and control work, establishing their new authority and shifting their identity as one of the group to that of the boss, they must be cautious of becoming overly condescending or antagonistic as it can be detrimental to their effectiveness and success (Kaiser & Craig, 2011).

Motivational tactics are a large part of managing performance at the bottom level and consist of maintaining consistency in treatment of employees and distributions of rewards or discipline; meeting the basic needs of employees at work; recognizing and understanding the limits under which people are working; building the confidence of the team in their abilities, in each other, and in the supervisor; and providing support (Hedlund et al, 1999). Along with this, supervisors typically engage in more transactional and less transformational leadership behaviors than higher levels (Kane & Tremble, 2000; Oshagbemi & Gill, 2004). Specifically, they engage in more passive management by exception, monitoring performance but only intervening when problems become serious; slightly less active management by exception, monitoring performance and taking corrective action as necessary; and less contingent reward, rewarding high performance or punishing low performance (Kane & Tremble, 2000; Oshagbemi & Gill, 2004). This is consistent with the directing and controlling work required in their role: monitoring performance for any setbacks and taking action when problems are serious.

The lower amount of contingent reward likely reflects the lower authority inherent in bottom management positions where the ability to reward or punish is limited by rules and policies in the organization (Blankenship & Miles, 1968). The lower expression of transformational leadership behaviors is likely due to the low level of experience in leader and manager roles and since the work at bottom levels is typically more straightforward and concrete, is not as necessary for effectiveness.

Most of bottom manager work is focused on more immediate issues in technical areas related to products, services, and their immediate marketability and they tend to do very little to no work with public or customer relations, long range thinking and planning, or business decisions (Heifetz & Laurie, 2001; Tornow & Pinto, 1976). To assist in handling and quickly solving issues in technical areas or production, lower level managers employ a more decisive approach to decision-making, typically using the information at hand to make quick decisions focusing on a single solution (Brousseau, Driver, Hourihan, & Larsson, 2006). Because of their proximity to the work, bottom managers are the most involved in entry-level staffing: writing job descriptions, reviewing and interviewing applicants, deciding which applicants to hire, and occasionally "filling in" on projects or in individual contributor roles when needed to ensure work is completed (Luthans et al, 1985). They also gather and compile data for superiors, increasing the importance of relationships with upper management and requiring supervisors to be able to influence up the organizational hierarchy in addition to influencing their subordinates (Hedlund et al, 1999; Tornow & Pinto, 1976).

Despite controlling much of the work of subordinates, supervisor positions often have little formal authority and often require younger or less-experienced managers to direct more senior or experienced personnel (Blankenship & Miles, 1968; Hedlund et al, 1999). They need to be able to solve problems and make decisions that are accepted by subordinates, even unpopular decisions, and therefore need ways to help their staff understand and accept their decisions (Martineau, Laskow, Moye, & Phillips, 2005). This requires establishing credibility among one's staff, an activity found unique to bottom management (Hedlund et al, 1999). Along with establishing credibility, having little formal authority requires supervisors to rely more on interpersonal influence. Pavett and Lau (1983) found that the role of leadership, defined as consisting of interpersonal relationships, motivational activities, and integrating individual and organizational goals, to be rated most important at the bottom level. Managing the self was found to be most important at the bottom level, where seeking feedback, managing stress around the team, and monitoring one's own performance can help establish credibility and allows a supervisor to better connect with subordinates (Hedlund et al, 1999). To further develop relationships with subordinates, bottom level managers spend more time socializing and politicking, engaging in more informal discussions, jokes, gossip, and non-work related talk than managers at higher levels (Luthans et al, 1985).

***Middle management.*** At the middle management level, performance requirements center on implementing and managing organizational strategy and coordinating the work of various business units into the overall organizational strategy. Middle managers translate the general directives provided by top management into

specific operational plans, objectives, and schedules, coordinating and organizing the various business units into the strategy and communicating the benefits in a way to secure each unit's commitment (Kraut et al, 1989). They therefore need to stay informed of organizational goals and strategies set by top management and monitor the external environment for factors that may affect their accomplishment. Along with this, they further expand and develop organizational strategy by providing upper levels with feedback from employees and customers and keep them informed of current operating conditions (Huy, 2001). This makes middle management a unique center of information flow up, down, and throughout the organization and means effective communication with and from middle managers is essential for organizational success (Kaplan, 1984). It also reflects the unique challenges of middle management: they must be responsible and responsive to both the level above and the level below them, requiring a move away from the more "hands-on" involvement of bottom management to learning how to work in ways that support those who do the work directly while interpreting strategy and communicating its implications to employees (Martineau et al, 2005; Tornow & Pinto, 1976).

In linking units across the organization, managers at this level review and control the allocation of resources and manpower (Kraut et al, 1989; Pavett & Lau, 1983; Tornow & Pinto, 1976). Though they have less direct supervision of their subordinates, they develop metrics to evaluate and monitor the progress and performance of operations, estimating and deciding what resources are required to ensure efficient and effective completion of work and which lower-level managers and teams will be responsible for

specific projects and deliverables (Kraut et al, 1989; Tornow & Pinto, 1976). Resource allocation also requires managing expense control, finding ways to reduce costs, and preparing and reviewing budgets (Tornow & Pinto, 1976). With the increased amount and complexity of variables and information, middle managers make less quick decisions on limited information and become more flexible, integrating information into better or alternative solutions (Brousseau et al, 2006). They typically match being decisive on a single solution versus more consultative and flexible with plans to the necessity of the situation. Coupled with their interpretation and implementation of strategy, middle managers are the most likely to initiate action towards organizational goals (Blankenship & Miles, 1968).

While working across organizational boundaries, middle managers often must coordinate the efforts of various people, groups, or units they have no direct control over and therefore it is important to establish effective working relationships across organizational boundaries through cooperation and trust (Hedlund et al, 1999; Tornow & Pinto, 1976). They not only assign work but also must persuade other organizational groups or mid-level managers to provide resources, information, products, or assistance necessary for their own work (Kraut et al, 1989; Pavett & Lau, 1983). They use a very supportive approach to leadership and management while refraining from being abrasive, consistent with the need for them to initiate action and communicate strategy up, down, and across organizational boundaries, as well as the negotiation and exchange of support and resources. In addition to this, middle managers become more directive and less empowering of their subordinates, reflecting their "centralized authority limiting the

autonomy of functional units and directing them toward a common objective" (Kaiser & Craig, 2011, p. 109). Middle managers are the coordinators of the various departments in an organization assigning the work and assignments to each of their functional units requiring this directive approach.

In addition to managing employee relations, middle managers have an increased role in public and customer relations, where they take a more active role in promoting the company's products and services and establishing a good reputation among customers and the community (Pavett & Lau, 1983; Tornow & Pinto, 1976). This often involves frequent contact and negotiation with representatives from other organizations and the community (Michael & Yukl, 1993). Middle managers must be able to handle conflicts of disagreements that may arise when dealing with several units and to confront superiors when they disagree with their decisions (Hedlund et al, 1999; Tornow & Pinto, 1976).

Working with and coordinating multiple interdependent groups requires middle managers to broaden their perspective to include internal and external influences on the organization and increase their knowledge base beyond their technical specialty to effectively handle the various functions they are now responsible for and more complex problems. In essence, middle managers become high-level consultants, where they must expand and apply their technical knowledge and expertise to solve broader and more complex problems, issues, questions, and policies. To do so effectively they are often required to learn and integrate the fields of the various units they oversee and develop an understanding of advanced principles, theories, and concepts that were unnecessary for their work at lower levels (Allan, 1981; Tornow & Pinto, 1976). This allows mid-level

managers to develop appropriate performance metrics and better allocate resources among their groups. They also are able to meet with bottom management and effectively discuss performance issues and understand and communicate forthcoming changes to the group (Kraut et al, 1989).

To effectively engage functional units and coordinate multiple groups to commit to organizational strategy, middle managers display more transformational leadership behaviors than lower levels and must balance the work required to implement organizational strategy with the welfare of their subordinates (Hedlund et al, 1999; Kane & Tremble, 2000). Transformational leadership helps them motivate their subordinates by putting more emphasis on development and stimulating employee enthusiasm for their work (Hedlund et al, 1999). This is reflected in that taking care of subordinates becomes more important as managers shift from lower levels to mid-levels. Activities and behaviors around taking care of employees include: encouraging subordinates to take initiative with assignments within the scope of their job; furthering their development and engaging them in decision-making; showing concern for their well-being; keeping them informed; and protecting them from or resolving conflicts between directives from upper management and their welfare (Hedlund et al, 1999). Reward and recognition for high performance or disciplining poor performance is also an important function of middle management evidenced by an increase in contingent reward behaviors, potentially due to their greater authority in providing or setting reward standards for high performance and in terminating or exercising discipline for poor performance (Kane & Tremble, 2000; Oshagbemi & Gill, 2004). In addition, with globalization, increase in the pace of change,

and downsizing of the workforce in many organizations, it is important for middle management to act as sort of emotional support for lower levels, supporting subordinate efforts and providing assurance when appropriate (Huy, 2002; Kaiser et al, 2011).

***Top management.*** Top management and executives develop and set organizational strategy and objectives, monitoring the external environment for trends and opportunities. They are concerned with the future of the organization, focusing on long-range thinking and planning based on their continuous evaluation of the organization's capabilities, and protecting it through demonstrating commitment to its mission and objectives and encouraging trust among its employees (Allan, 1981; Gomez-Mejia et al, 1985; Hedlund et al, 1999; Luthans et al, 1985; Mahoney et al, 1965; Tornow & Pinto, 1976). Keeping an "eye on the outside," the top-level constantly evaluates the business's environment and is required to maintain awareness of sales, business, economic, and social trends (Gomez-Mejia et al, 1985). This often involves networking with other leaders across organizational and industry boundaries to broaden their knowledge base and gather information that could potentially lead to new business opportunities (Kraut et al, 1989). The higher exposure to the external environment requires upper levels to maintain a calm and confident public persona and they are often more involved in customer support and external relations than lower levels (Allan, 1981; Hedlund et al, 1999; Martineau et al, 2005; Pavett & Lau, 1983).

Developing organizational strategy requires them to be the big decision makers, directing organizational change by determining where to focus the organization's financial commitments, often requiring negotiation with representatives from other

organizations, and managing the human resources of the business (Blankenship & Miles, 1968; Hedlund et al, 1999; Luthans et al, 1985; Pavett & Lau, 1983; Tornow & Pinto, 1976). This requires a higher measure of risk taking and innovation in upper management than lower levels: they must identify new solutions and opportunities to remain competitive (Martineau et al, 2005). It also requires top level leaders and managers to handle a greater deal of information where they must be able to evaluate and determine any necessary changes for the organization based on analysis of the competition, economic conditions, social trends, etc. (Allan, 1981). Handling and evaluating increasing complex information leads top level managers to develop a much more flexible approach in decision-making. Upper-level managers often frame problems broadly, use input from several sources, and are willing to quickly change course to keep abreast of shifting situations and to account for new information (Brousseau et al, 2006). This is necessary in order to develop effective strategies and stay ahead of the competition. Communication from the top is oriented towards clearly articulating and imparting the mission, vision, and values being set, decisions being made, and the expectations for their implementation by the lower levels (Hedlund et al, 1999; Oshagbemi & Gill, 2004).

Building consensus and commitment to the organizational goals and strategy requires top-level leaders to focus more on empowering their subordinates to get the work done effectively rather than engaging in more directive approaches or controlling the work (Gomez-Mejia et al, 1985; Kaiser & Craig, 2011; Oshagbemi & Gill, 2004; Tornow & Pinto, 1976). The complexity of executive-type roles also encourages this, as

much of the work can be too much for a single person to handle alone. Subordinates to higher levels are typically very experienced professionals in their own right and with the highly complex issues upper management handles, they are often involved, even depended upon, in the decision process to effectively reach beneficial solutions, garner their support for new initiatives, and provide development opportunities (Blankenship & Miles, 1968; Brousseau et al, 2006; Kaiser & Craig, 2011; Michael & Yukl, 1993). Top-level managers create the strategies but then hand off their implementation to middle managers, empowering them and giving them the autonomy to handle the coordination of the business units and people required including the scheduling, planning, monitoring product and service delivery, and tracking of costs and quality (Tornow & Pinto, 1976).

With the strategy development and communication required by top-level managers, they exhibit the most transformational leadership behaviors of the three levels (Oshagbemi & Gill, 2004). Specifically, they engage in more intellectual stimulation and inspirational motivation, encouraging divergent thinking and for followers to develop innovative strategies while also conveying a strong vision for the future that stimulates enthusiasm and builds confidence. Along with this, as middle managers move into more senior positions, they shift from high-level technical consultants and become more management consultants, acting as coaches or mentors and using interpersonal influence to develop and motivate employees (Gomez-Mejia et al, 1985). This is reflected in that developing subordinates increases in importance at upper levels of management where top-level managers provide subordinates opportunities to gain experience; allow them to solve their own problems; counsel them on their mistakes; and help them identify their

strengths and weaknesses (Hedlund et al, 1999; Oshagbemi & Gill, 2004). Though motivating subordinates through rewards and recognition decreases in importance at upper levels (Hedlund et al, 1999), top-level leaders rely more on providing learning or challenging experiences and personal inspiration to motivate their employees (Oshagbemi & Gill, 2004).

***Across all 3 levels.*** Though many of the performance requirements differ between levels, certain leadership activities are carried out by all levels or vary in the manner they are carried out (Zaccaro, 2001). At all levels, managers engage in direct interpersonal influence, as well as direction setting for their specific unit (i.e., goal setting, planning, strategy making, etc.) and implementation of initiatives to achieve organizational objectives (i.e., linking their unit to the environment around it and coordination and maintenance of operations within the organization; Zaccaro, 2001). Adaptability and learning are also important across all three levels (Freedman, 2011; Kaiser & Craig, 2011). As can be seen from the research described above, the performance requirements change across the three levels, requiring managers and leaders to constantly change or adapt their approach to work in order to remain effective. A construct used in an attempt to operationalize this idea is Learning Agility, defined by Lombardo and Eichinger (2000) as "the willingness and ability to learn new competencies in order to perform under first-time, tough, or different conditions" (p. 323). In analyses using a measure of Learning Agility, Kaiser and Craig (2011) found it to be important for effectiveness at every level. However, there is considerable debate about what actually constitutes Learning Agility; the concept seems to confound

motivation ("willingness to learn"), learning ability, personality, performance, and success, and as currently used in research, may be better defined as general learning ability, a topic already studied at length (DeRue, Ashford, & Myers, 2012). Further, because of the ambiguous nature in which it has been researched and defined, it is argued that there currently is no evidence for its validity in predicting performance (DeRue et al, 2012). If in the context of Kaiser and Craig's (2011) study it is assumed to be general learning ability, it supports research showing successful managers learn from the variety of challenging experiences they encounter throughout their careers (McCall, Lombardo, & Morrison, 1988). The changes in performance requirements coupled with the continued importance of learning indicates that success throughout a career hinges on the ability to adapt behavior to fit the unique job requirements of each level. Therefore, climbing the corporate ladder requires situational awareness, self-regulation, and a broad, flexible behavioral repertoire (Freedman, 2011; Kaiser & Craig, 2011; Kaiser & Overfield, 2010).

Further support for the importance of learning and adaptability across levels lies in the areas where general activities and behaviors may be similar but the way in which they are carried out differ. For example, effective communication is important at all levels, but at the bottom level it deals with gathering information from direct reports, targeting messages appropriately, and using the appropriate channels to convey information; at the middle level it expands to consist of delivering expectations while also handling the communication flow up, down, and throughout the organization; and at the top level concerns articulating the mission, vision, values, and objectives of the

organization (Hedlund et al, 1999; Kaplan, 1984). Differences in activities between levels also depend on the organization and situation; at times an executive may be involved in tactical problem solving in addition to his or her strategic role or a first line supervisor can make strategic decisions on which production problems are top priority (Kaplan & Kaiser, 2003). Managers at any level need to be able to recognize what behaviors will be effective and the changes in the nature of their work as they move up the organizational hierarchy. An important consideration when interpreting this research is the costs of a manager's time and it may not be that activities become unimportant, but rather the differences may be in the degree of importance and the priority assigned to a task or behavior (Kraut et al, 1989).

**Primary requisite skills.** The distinct skills necessary for a role are another differentiator between the three levels of management. Katz (1955) and Mann (1965) propose a skills typology of three categories: technical, human or interpersonal, and conceptual. They define technical skills as consisting of understanding and being proficient in a specific activity, particularly the methods, processes, knowledge, and techniques necessary to do it effectively and efficiently. Human or interpersonal skills are defined as referring to a person's ability or competence in working effectively with others or within a team and are demonstrated in their communication, forming and maintaining relationships, and showing concern for the feelings and needs of others. Their definition of conceptual skills centers on seeing the bigger picture behind issues and consist of proficiency with ideas, analytical and logical thinking, deductive and inductive reasoning, systems thinking, integrating and manipulating complex information

and connections between concepts, and anticipating potential consequences of alternative courses of action. In general, they state that technical skills deal with *things*, human or interpersonal skills deal with *people*, and conceptual skills deal with *abstract ideas*.

Both Katz (1955) and Mann (1965) theorize that managers at each level use all three types of skills but that the *relative* importance of each domain varies by organizational level: different sets of skills are of primary importance depending on the level. Specifically, they argue technical skills are most important at lower levels and decrease in relative importance moving up the hierarchy; interpersonal skills are important at every level but are more important than the other skill domains at the middle level; and conceptual skills are most important at the top, increasing in importance moving up the hierarchy. This is consistent with both theory and the performance requirements of the three levels of the organizational hierarchy described above: technical skills are required by supervisors to handle issues in day-to-day production; interpersonal skills are necessary for middle managers to effectively handle the communication and coordination of multiple units or teams; and conceptual skills are critical for executives to integrate organizational capabilities with external opportunities into strategies to gain a competitive advantage. All three domains are still necessary at each level, an executive may still engage in solving technical issues at times or a supervisor may need to engage in more conceptual thinking to improve products or work methods, but the importance of each skill domain relative to the others for success in their role, and the time available to devote to each, shifts moving up the hierarchy.

Correlational analyses done by Dai, Tang, and De Meuse (2010) on 360-degree feedback of skill ratings found the overall profile of skill requirements for a given level is increasingly different the further one moves up or down the organizational hierarchy. The correlations were strongest between adjacent levels and became weaker for non-adjacent levels supporting theory that the requirements for roles change moving up the hierarchy. Expanding on this, job analytic research shows that the amount and types of skill required by level varies depending on the skill domain as well as its relative importance (Mumford, Campion, & Morgeson, 2007; Mumford et al, 2000). Basic cognitive skills, consisting of collecting, processing, and disseminating information and learning, and interpersonal skills, consisting of interacting with and influencing others, were found to be most important across all organizational levels (Mumford et al, 2007). These correspond to the interpersonal skills and lower complexity conceptual skills defined by Katz (1955) and Mann (1965). Business skills involving management of material, personnel, and financial resources, and strategic skills consisting of understanding complex interrelationships between variables, had the greatest increases in relative importance moving up the hierarchy and correspond to higher complexity technical and conceptual skills as defined above (Mumford et al, 2007). Though not totally in alignment with the conceptualization of Katz (1955) and Mann (1965) since basic conceptual and interpersonal skills remained the most important across levels, Mumford et al (2007) did show that more complex conceptual and technical skills increased in importance moving up the organizational hierarchy. In addition to finding increases in competence and importance, Mumford et al (2000) found social judgment

(interpersonal) and problem-solving (conceptual) skills increased in their breadth and depth: from mid-level to senior level leaders, a greater number of variables were considered in generating viable solutions reflecting the increased complexity of higher level roles (Jacobs & Jaques, 1987; Streufert & Swezey, 1986).

Analysis of 360-degree feedback on managerial skills reveals that the importance of skills increases as one moves up the organizational hierarchy but varies depending on the transition: some only increased from bottom to middle management or from middle management to top while others increased across each level (De Meuse, Dai, & Wu, 2011). The 360-degree feedback used in the analyses was based on a competency model and though it is subject to the limitations identified by Campion, Fink, Ruggeberg, Car, Phillips, and Odman (2011), does offer insight into potential changes in the skills required at each level. A couple limitations to highlight while interpreting these results are that competency models are typically designed in a manner that facilitates ease of use for the organization and are often highly customized or tailored to the needs and wants of the organization. This means that they utilize organization-specific language, and the terms used to identify them may be ambiguous, their definitions less concrete than desired for scientific purposes, or definitions may be tailored to specific organizational values and goals. Another potential limitation is competency modeling is more often used as an organizational development intervention to create change and not as a data collection effort. Though this helps in identifying developmental needs, it can lead to bias in ratings or the organization may choose to only focus on a select number of competencies. De Meuse et al (2011) also caution that leadership effectiveness was not

assessed and therefore it cannot be concluded that the changes identified relate to increased effectiveness.

With these limitations in mind, the overall analyses conducted by De Meuse et al (2011) found 53 skills increased in their ratings of importance, 13 remained the same, and one decreased significantly: *Technical Learning*. Moving from supervisor level positions to middle management saw the greatest increases in importance on largely interpersonal skills: *Managing Vision and Purpose*, *Hiring and Staffing*, *Sizing Up People*, *Command Skills*, *Building Effective Teams*, *Developing Direct Reports and Others*, *Confronting Direct Reports*, and *Motivating Others*. From middle management to higher-level roles, conceptual skills around business and strategic skills increased the most in importance and level of skill. The largest importance increases were in *Strategic Agility*, *Business Acumen*, *Perspective*, *Creativity*, *Managing Vision and Purpose*, and *Political Savvy*.

Further analysis of the skills revealed that the rating of the mean level of skill in each varied depending on organizational level where some increased, some remained the same, and others decreased moving up the hierarchy (De Meuse et al, 2011). Overall, 13 increased in their mean level of skill, 44 remained the same, and 10 decreased. The largest increases from bottom management to middle management were also in mainly interpersonal skills: *Command Skills*, *Managerial Courage*, *Delegation*, *Comfort around Higher Management*, *Motivating Others*, and *Confronting Direct Reports*. For the transition into upper management, it was more conceptual skills where *Strategic Agility*, *Perspective*, *Managing Vision and Purpose*, *Creativity*, *Intellectual Horsepower*, *Business Acumen*, *Political Savvy*, and *Innovation Management* increased the most.

Several areas also decreased in the level of skill ratings: *Patience*, *Approachability*, *Listening*, *Caring about Direct Reports*, *Fairness to Direct Reports*, *Personal Disclosure*, and *Humor*.

The changes in importance and level of skill are in partial support of Katz (1955) and Mann (1965), and align with theory around differences between levels (i.e. Jacobs & Jaques, 1987; Katz & Kahn, 1976; Zaccaro, 2001) and the nature of work and performance requirements at each level (i.e. Kaiser & Craig, 2011; Kraut et al, 1989; Tornow & Pinto, 1976). Research supports the theory by Katz (1955) and Mann (1965) in showing the relative importance of skills change but fails to support theory in that there is not a decrease in importance of any particular skill domain (Mumford et al, 2007). Analyses of 360-degree feedback further support theory that there are changes in skill requirements by level (Dai et al, 2010; De Meuse et al, 2011). The transition into middle management requires an increase in the level of skill, and more importance is placed on, interpersonal skills while transitioning into upper management requires more conceptual skills. The one skill that decreased in importance across the three levels, *Technical Learning*, reflects the need for upper level managers to handle broader issues than the day-to-day production problems of supervisors (Kraut et al, 1989; Tornow & Pinto, 1976). The skills that decreased in their mean rating of skill level are primarily interactive skills, and likely reflect that as managers move up the hierarchy and other skills increase in their importance and required skill, they don't have the time or cognitive resources to devote to the types of activities requiring greater skill in these areas (De Meuse et al, 2011). *Integrity and Trust* continually increased in importance

through the top level but the rating of skill level decreased slightly. This could reflect that executives tend to be less approachable, engaging in less interactive skills and disclosing less than lower level managers, or it may be that top-level leaders must balance demonstrating integrity and trust while being the ones who set organizational policy or change behavior to ensure organizational success (De Meuse, et al 2011; Hooijberg, Lane, & Diverse, 2005).

**Organizational responsibilities.** The traditional business practice to differentiate levels is in terms of organizational responsibilities, who and what each level is responsible for (Charan et al, 2001; Freedman, 1998). The bottom level is the first time incumbents have responsibility for the performance of employees, typically individual contributors (Freedman, 1998). They are no longer responsible for technical expert work, but instead building and ensuring their team or group of technical specialists (individual contributors) is a high-performing team. Supervisors typically operate in a single functional area (i.e. sales, production, finance, etc.), the area they were an individual contributor in, but now have to understand each subordinate's work and how they interface with each other and customers (Freedman, 1998; Kaiser et al, 2011). Their responsibility shifts from their own work to ensuring each subordinate in their unit is performing adequately and day-to-day production issues are kept to a minimum.

Middle managers are responsible for the coordination and performance of multiple functions and groups. Subordinates are either managers themselves or highly specialized professionals who the middle manager delegates assignments to, and with peers (other middle managers), negotiates for resources and ensures work is driving

organizational strategy. Several of the groups they are now responsible for the middle manager has no expertise in or little appreciation for (Kates & Downey, 2005). Coordinating and integrating these diverse functions requires middle management to influence others to keep their focus on contributing to the broader organizational goals instead of on individual concerns. They are responsible for communicating organizational strategy to lower levels through concrete assignments and actionable activities to ensure its implementation. Profit and loss responsibilities increase at the middle management level where they are responsible for the performance of entire business units, spanning several functions, and the specific products and services offered (Kaiser et al, 2011).

Top-level managers and executives are responsible for the coordination and performance of multiple business units, and for Chief Executive Officers (CEOs) or Presidents, the entire organization. They set organizational strategy and direction and their value is ultimately judged on the quality of only a few consequential decisions that they make in any given year (Freedman 1998; 2005). The external focus of upper management means they are largely responsible for public relations and the organization's reputation as well as identifying future trends in the market or industry or in what areas the organization can gain a competitive advantage over competitors (Freedman, 1998; Martineau et al, 2005). Being the top-levels, managers here have few, if any, people they report to and are therefore typically accountable to extra-organizational constituents such as boards of directors and shareholders for publicly

traded firms, owners in private business, or politicians in government institutions (Gandossy & Sonnenfeld, 2004).

**Traits.** Research has done little in examining the individual traits of leaders across management levels but a few studies provide information. Guilford (1952), Kuncel (1997), and Ones and Dilchert (2009) evaluated changes in personality and cognitive ability across the organizational hierarchy. Guilford (1952) found that across several personality traits, executives scored higher than supervisors. Though the Five Factor Model was not yet in use, the traits corresponded closely to the traditional dimensions: Extraversion (sociable, happy-go-lucky, active, ascendant or socially bold, self-confident), Emotional Stability (free from depression, emotionally stable, calm and composed), Conscientiousness (objective), and Agreeableness (agreeable, cooperative). Expanding to predict performance, Guilford (1952) found that the traits contributing to success at the executive and supervisor levels differed. Specifically, he found that sociability, lack of inferiority feelings, cooperativeness, and masculinity related to success as an executive while emotional stability, calmness and composure, and cooperativeness contributed to success at the supervisor level. This research corresponds to the performance requirements detailed above that executives are required to lead organizations, developing strategy and representing the organization to the public requiring self-confidence (lack of inferiority feelings) and "masculinity" which typically represents taking change and being more dominant. Supervisors on the other hand, are typically transitioning into their first management position and are now responsible for

the work of their new subordinates requiring emotional stability and freedom from nervousness in order to effectively take on the management role.

In the study by Kuncel (1997), mean values for personality as assessed by the California Personality Inventory increased moving up the hierarchy for *Managerial Potential*, *Independence*, *Dominance*, and *Leadership Potential* while *Femininity* decreased slightly. These findings reflect the changes between levels detailed above: as one moves up the hierarchy, they have more authority and responsibility with less people overseeing them which likely requires increased independence and potentially a more dominant demeanor to engage in the directive behavior necessary at higher levels (i.e. Freedman, 1998; Hedlund et al, 1999; Kraut et al, 1989; Tornow & Pinto, 1976). Dominance has also been found to predict attained influence within a group and perceived competence and so it follows that more dominant individuals will rise higher in an organization (Anderson & Kilduff, 2009). The managerial and leadership potential scales were developed specifically to identify effective managers and therefore should show increases higher up in the hierarchy. The femininity scale is comprised of items around socialization, self-control, development of ethical standards, and emotional sensitivity. Its decrease follows the skill literature in that it largely represents interpersonal types of behaviors, which in terms of skills are rated as less important at higher levels (De Meuse et al, 2011; Katz, 1955; Mann, 1965).

Ones and Dilchert's (2009) study shows that scores across the traditional Five Factor Model, as assessed by the Global Personality Inventory, increase moving up the organizational hierarchy. These increases are coupled with a decrease in variability when

compared to the normal population. They note however, that though the mean scores differ across levels, each level follows the same general profile pattern of scores. This would appear to indicate the personality requirements at each level of management may be similar but require greater depth and breadth at higher levels, mimicking and supporting the skills research by Mumford et al (2000).

Kuncel (1997) and Ones and Dilchert (2009) also assessed cognitive ability. In Kuncel's (1997) study, cognitive ability was found to increase after the supervisor level but then plateau across the remaining levels. Vocabulary was the only scale found to continue increasing across all levels. Closer examination reveals verbal reasoning and critical thinking also appear to differentiate all three levels but their 95% confidence intervals slightly overlap whereas numerical and spatial ability only differentiated the supervisor level (extensive overlap between confidence intervals). Ones and Dilchert's (2009) study show increases in scores across levels with the largest differences occurring for General Mental Ability and Critical Reasoning. This follows research that more conceptual abilities are needed at higher levels while other abilities, though important, may decrease in their necessity or use (De Meuse et al, 2011; Kaiser & Craig, 2011; Mumford et al, 2000; Mumford et al, 2007). The results indicate cognitive ability is important to management and the lack of clean differentiation between specific abilities may indicate that the requirements for a specific cognitive ability are dependent on the requirements of the job (Kuncel, 1997).

Character, "doing the right thing despite outside pressure to the contrary" and consisting of measures of selflessness, integrity, competency, and spiritual appreciation,

may also increase for managers moving up the organizational hierarchy (Barlow, Jordan, & Hendrix, 2003, p. 564). Through analyses of the desirability of the four components of character listed above, along with an overall measure of character assessing the frequency of displaying twelve more specific attributes, Barlow et al (2003) found mean increases across all three levels for overall character, selflessness, competency, and spiritual appreciation, while integrity increased from the bottom to the middle level but then slightly decreased moving to the top, but still higher than the bottom level. This supports the research previously discussed: moving up the hierarchy, managers engage with more people inside and outside the organization requiring coordination at the mid-level while the participative decision-making at the top requires respect for others and valuing differing perspectives – selflessness and spiritual appreciation (e.g. Hedlund et al, 1999; Kraut et al, 1989; Tornow & Pinto, 1976); responsibilities increase and their skill levels across several areas increase – competency (e.g. Freedman, 1998; Mumford et al, 2007); and that integrity increases in importance across levels but may slightly decrease in skill level at the top – integrity and trust (De Meuse et al, 2011). It may also be that "Character" can be conceptualized as the opposite of the derailing type of leadership behaviors described by Hogan et al (2010) and therefore may assist in transitioning up the organizational hierarchy versus stagnating or derailing managers.

**Transitions**

A final issue regarding level differences is the process of transitioning up to the next level. As discussed previously, manager derailment is a major problem for

organizations where approximately 50% of managers stall in their careers, are demoted, or are fired (Hogan et al, 2010). The majority of derailment occurs during upward transitions where managers enter ambiguous situations and discover reality differs greatly from their expectations, often causing considerable distress (Freedman, 2011; McCall & Lombardo, 1983).

Although each transition is unique, there are several common factors (Hogan et al, 2010; Kaiser et al, 2011; Kates & Downey, 2005; McCall & Lombardo, 1983). First, organizations often provide insufficient information on changes in job requirements and individuals frequently receive little or inadequate preparation and support before, during, and after transitions (Freedman, 1998; 2005; 2011; Hogan et al, 2010; Kates & Downey, 2005). Second, past performance is typically the driver for promotions and an individual's fit with the requirements of the next role or job is not necessarily considered where lacking certain skills or abilities may be extremely detrimental when at lower levels it was not a concern (Freedman, 2011; McCall & Lombardo, 1983). Third, "strengths become weaknesses" (McCall & Lombardo, 1983, p. 11): the behaviors that made the manager effective at a lower level become detrimental at higher levels where many behaviors become functionally inappropriate (Freedman, 1998). For example and described above, technical expertise is necessary at lower levels but higher levels are required to take broader perspectives where delving into technical issues can become micromanagement and takes time away from higher priority tasks. This flows into the final factor, behavioral addiction: "under the stress that accompanies unfamiliar, complex, ambiguous, or uncertain circumstances or crisis conditions, [managers] tend to

regress to those behavioral default patterns with which they feel most *competent*, *confident*, and *comfortable*" (Freedman, 2011, p. 149). Managers, and people in general, engage in the behaviors that are reinforced and where they are confident in their ability. When transitioning into a new role then, managers tend to revert to the behaviors they are familiar with and that worked in their previous role, even when they may now be counterproductive (Freedman, 2005; 2011). Self-awareness is therefore critical and managers-in-transition must recognize the changes in behavior that are required in their new roles.

**Let go, preserve, add on.** "Managers-in-transition must develop an understanding of when and how circumstances change…[and] discern the new, unprecedented, mostly discontinuous but legitimate and demanding requirements of their new [position]" (Freedman, 2005, p. 30). At each transition, managers "must reinvent or transform themselves to some degree" and consciously decide "which elements of their previous role they should *let go* or do less, *preserve* or continue to use, and *add on* or do more or better" (Freedman, 2011, p. 147). These three challenges represent the psychological demands managers face when transitioning into new jobs at higher organizational levels and were developed based on over 35 years of observations of leadership and organizational change through organizational consultation (Freedman, 1998). Unfortunately, organizations tend to underestimate these challenges and consequently do not provide adequate preparation or support, instead often asking managers to "sink or swim" (Freedman, 1998; 2005; 2011).

***Let go.*** Managers-in-transition need to decrease or stop the use of the now outmoded or inappropriate but familiar tasks, activities, and functions of their old role. Many of these competencies enabled their effective performance but are now not necessary or detrimental to the fulfillment of their new responsibilities. Managers likely felt confident and competent in their old abilities, and may be "addicted" to their use because of the repeated success they brought. *Letting go* of these "reliable old friends" is easy to prescribe but difficult, and in many ways threatening, to do – they are being asked to give up something that has worked in the past for new things they may have no experience with and are unsure of their success. This can be very similar to drug addiction where managers experience withdrawal and mourning for the "loss" of these familiar competencies. Managers-in-transition therefore need encouragement and support during the process to ease the shift away from engaging in their use (Freedman, 1998; 2005; 2011).

***Preserve.*** Certain responsibilities and tasks from lower levels will still be needed and useful at higher levels and managers-in-transition must continue to perform and apply these competencies. The difficulty lies in distinguishing between the competencies to keep and those to let go. Inevitably, managers-in-transition "will make errors in judgment: they will let go of some elements that they later realize they should have preserved, and they will preserve some elements that they later realize they should let go" (Freedman, 2011, p. 148). Errors are correctable but require managers to be humble, strong enough to accept they made a mistake, and desire to learn in order to recognize the error and take the actions necessary to fix it (Freedman, 1998; 2005; 2011).

***Add on.*** The final psychological demand, adding on, requires managers-in-transition to start or do more to master and apply new and potentially unfamiliar responsibilities and competencies. This requires managers to be learners and continuously work on self-development. It can be a very uncomfortable experience for some managers unused to constant self or professional development since learning curves start with decreases in performance as the individual works to build the basics before beginning to improve as mastery is achieved (Freedman, 2005). This discomfort leads some managers to convince themselves that the learning is unnecessary or inconvenient but these rationalizations are meant to ease their anxiety: "most managers-in-transition harbor fundamental doubts about their own capacity to learn and to adapt" (Freedman, 1998, p. 137). This requires a measure of emotional fortitude from managers and organizational support as they struggle through the initial learning curves of their new responsibilities (Freedman, 1998; 2005; 2011).

**Continuity vs. discontinuity.** The research presented above supports the *Let Go*, *Preserve*, and *Add On* model of manager transitions and represents both a continuous and discontinuous pattern of changing requirements. Certain activities, roles, performance requirements, skills, organizational responsibilities, and traits remain important across levels or require greater aptitude in the same area moving up the hierarchy supporting the continuity perspective while others decrease in their importance, or change in how they are enacted, supporting the discontinuity perspective. This is important for organizations to recognize in order to appropriately design effective training and development programs for employees to build a strong and successful management team.

**Summary of the Research Literature on Leadership across Levels**

The literature on level differences is extensive but clearly not definitive. Research shows many aspects in how managerial work differs across the bottom, middle, and top implying the behaviors and traits required for effectiveness are also different. Adapted from Kaiser et al (2011), Table 2 provides a brief summary of some of these main differences. Some research has been done on groups of behaviors and traits (e.g. Brousseau et al, 2006; Kaiser & Craig, 2011; Ones & Dilchert, 2009; Oshagbemi & Gill, 2004) but the literature remains largely descriptive and job analytic, often based in a single organization (e.g. Kraut et al, 1989). Pulling from the extensive leadership literature to expand on level differences is crucial for understanding the organizational hierarchy. Specifically, examining how personality, cognitive ability, developmental experiences, and performance requirements change for managers at the bottom, middle, and top levels of management will give a more complete picture of the requirements of each level. This gap in the literature presents two important questions:

1. What are the mean differences in personality, cognitive ability, experiences, and performance requirements between bottom, middle, and top management?
2. Do the main determinants of leadership and management performance change between bottom, middle, and top management? In other words, do the prediction equations for performance change by level?

Differences in personality, cognitive ability, experiences, and behavioral performance requirements have not received as much attention as differences in tasks in research on

the organizational hierarchy but have been found to be important to the development of effective leadership and management in the broader literature. A brief review of research on the determinants of leadership performance follows.

## Determinants of Leadership Performance

**Personality in leadership.** Personality was one of the first areas in which scientists explored the nature of leadership and who was most suited for leadership roles, stemming from the Great Man Theory – that certain people make great leaders. Beginning with reviews by Stogdill (1948; 1974) and Mann (1959), personality was found to influence leadership though not explain it entirely. "Having the 'the right stuff' in and of itself was no guarantee of success, but it did improve the odds of successfully influencing a group toward the accomplishment of its goals" (Hughes, Ginnett, & Curphy, 2006, p. 159). Meta-analytic evidence of the Big Five Factor model of personality (Extraversion, Agreeableness, Openness, Conscientiousness, and Emotional Stability) reveals that overall, it correlates .39 with leadership effectiveness, defined as "a leader's performance in influencing and guiding the activities of his or her unit toward achievement of its goals" (Judge, Bono, Ilies, & Gerhardt, 2002, p. 767). The specific five factors showed correlations of .24 for Extraversion, .21 for Agreeableness, .24 for Openness, .16 for Conscientiousness, and .22 for Emotional Stability. In their review of personality and leadership, Hogan, Curphy, and Hogan (1994) detail several studies showing relationships between various facets of personality and ratings of operating efficiency, personal relations, satisfaction, financial rewards, job conditions (Bentz,

1985); managerial advancement (Bray & Howard, 1983); and team performance (Chidester, Helmreich, Gregorich, & Geis, 1991). In a meta-analysis examining the relationship between trust in leadership (i.e. perceived integrity) and several work outcomes, Dirks and Ferrin (2002) found significant relationships for job performance ($r$ = .17), organizational citizenship behaviors ($r$ = .13 - .23), intent to quit ($r$ = -.47), organizational commitment ($r$ = .59), and job satisfaction ($r$ = .65). Collins (2001) found high-performing organizations, classified as having cumulative returns at least three times the market value for fifteen years, were led by individuals characterized as very humble and extremely persistent.

Personality clearly has an impact on leadership effectiveness and research by Guilford (1952), Kuncel (1997), and Ones and Dilchert (2009) show that it differs between leadership levels even having different relationships with performance depending on the level. With the refinement of personality measurement, the impact of personality on leadership may become clearer, especially in regards to differences between the three main levels of the organizational hierarchy. It also may follow that with the decrease of importance for technical skills, the impact of personality on leader and/or manager effectiveness may increase as one moves up the organizational hierarchy.

**Cognitive ability.** It is largely accepted that cognitive ability, or intelligence, is a major determinant of performance, with an overall validity of .51 for predicting general job performance, and this relationship becomes stronger the more complex the job (Schmidt & Hunter, 1998). In regards to leadership, meta-analytic findings show a relationship between intelligence and objective leadership effectiveness equal to .33,

where objective effectiveness was based on ratings of quantifiable scores such as team performance on a survival simulation (Judge, Colbert, & Ilies, 2004). Reviewing the literature, Hughes et al (2006) summarize that "intelligent leaders are faster learners; make better assumptions, deductions, and inferences; are better at creating a compelling vision and developing strategies to make their vision a reality; can develop better solutions to problems; can see more of the primary and secondary implications of their decisions; and are quicker on their feed than leaders who are less intelligent" (p. 175). Like personality, it increases a leader's odds of success but does not guarantee it and many activities, especially routine or autotomized tasks, require lower levels of intelligence (Salgado, Anderson, Moscoso, Bertua, de Fruyt, & Rolland, 2003).

With its importance to job performance in general and leadership specifically, cognitive ability is a major determinant of effectiveness at every level of the organizational hierarchy. Research by Kuncel (1997) and Ones and Dilchert (2009) suggest there are differences across the hierarchy, and that certain cognitive abilities may increase in importance at later stages in a career although the influence of overall cognitive ability may plateau. Further examination of how the importance of cognitive ability may change moving up the hierarchy could show whether specific abilities or types of knowledge are necessary at different levels or whether increases in overall cognitive ability are required.

**Performance requirements.** Performance requirements, or the behaviors required for effective performance, have been a significant avenue of research for leader effectiveness beginning with the Ohio State and Michigan studies (Bowers & Seashore,

1966; Fleishman, 1953). These studies found two main factors: 1) Consideration – how friendly and supportive the leader is with subordinates and 2) Initiating Structure – how much a leader emphasizes meeting work goals and accomplishing tasks. Meta-analysis reveals that across several leadership effectiveness criteria, Consideration (C) has an overall correlation of .48 while for Initiating Structure (IS) it is .29 (Judge et al, 2004). Criteria included ratings of follower job satisfaction (C = .46; IS = .22); follower satisfaction with the leader (C = .78; IS = .33); follower motivation (C = .50; IS = .40); leader job performance (C = .25; IS = .24); group-organization performance (C = .28; IS = .30); and leader effectiveness (C = .52; IS = .39).

More recent research has focused on Transformational and Transactional Leadership. Transformational leadership generally refers to motivating followers to do more than they originally expected to do while transactional leadership refers to clarifying what performance is required and how subordinate and organizational needs will be satisfied as a consequence. In a meta-analytic study of their effect across organizational criteria, transactional leadership was broken into four components: contingent reward – reward/punishment based on performance; management by exception-passive (MBEP) – monitoring performance and intervening when problems are serious; management by exception-active (MBEA) – monitoring performance and taking action when necessary; and laissez-faire – avoidance of leadership responsibilities. Though also composed of four components, transformational leadership was treated as a single factor in the meta-analysis. Results show validities of .44 for transformational leadership (TL), .39 for contingent reward (CR), -.18 for MBEP, .15 for MBEA, and -.37

for laissez-faire (LF; Judge & Piccolo, 2004). Criteria again included ratings of follower job satisfaction, follower satisfaction with the leader, follower motivation, leader job performance, group or organization performance, and leader effectiveness with validities ranging from .26 to .71 for TL, .16 to .64 for CR, -.27 to .00 for MBEP, -.09 to .24 for MBEA, and -.58 to -.01 for LF.

Another behavior required for effective performance, decision making, has also received strong empirical support. Evaluating their Normative Decision Model which details the decision process based on a series of yes or no questions and the situation, Vroom and Jago (1978) find that when the model was followed, overall effectiveness, quality, and acceptance of decisions were higher than when the model was violated. This model takes into account the influence of the situation and the results emphasize that a leader's actions must be tailored to fit the demands of each situation: a certain method for influencing others may be effective in one situation but prove completely ineffective in another (Vroom & Jago, 2007).

As briefly discussed earlier, Campbell (2012a) integrated and synthesized the leadership and management literature on the performance requirements for leadership and management performance into the specific functions and behaviors that make up both processes (Table 1). Leadership is composed of six factors: Consideration, Support, Person-Centered; Initiating Structure, Guiding, Directing; Goal Emphasis; Empowerment, Facilitation; Training, Coaching; and Serving as a Model. Management is composed of eight factors: Decision Making, Problem Solving, and Strategic Innovation; Goal Setting, Planning, Organizing, and Budgeting; Coordination;

Monitoring Unit Effectiveness; External Representation; Staffing; Administration; and Commitment and Compliance. These represent what over 60 years of research has found to be the behaviors specific to leadership and management and required for effective performance.

Performance requirements are the actions taken to achieve organizational objectives and by definition, competence in them drives effectiveness. As the literature shows, several dimensions relate to leadership effectiveness and summarized into a taxonomy, reveal six factors associated with leadership and eight with management. Using this taxonomy to examine performance requirements across levels in an organization may reveal very different changes for leadership and management. In this study, performance requirements are evaluated in terms of behavioral competencies – the behaviors rated high and low through 360-degree feedback. As behavioral competencies, they reflect what behaviors managers at a given level are most competent in and what behaviors they may need development on. Changes in the order and competence across levels are important to understand and give direction for leadership and management training and development initiatives.

**Experiences.** "Experience – not genetics, not training programs, not business school – is the primary source of learning to lead" (McCall, 2010, p. 3). To a small extent, leadership comes from genetics, with heredity estimates between 17% (Iles, Gerhardt, & Le, 2004) and 30% (Arvey, Rotundo, Johnson, Zhang, & McGue, 2006) of the variance in leadership emergence being accounted for by genetic and hereditary factors around personality and cognitive ability. However, that leaves 70-83% to other

factors: learning, past performance, favoritism in promotions, error, etc. To the extent leadership is learned, it is largely from experience (McCall, 2010). Research into experiences in the development of leadership finds three main components facilitate learning: the experience should be challenging, individuals should receive feedback and assessment of how they performed, and there should be a support structure in place to assist in coping with and overcoming mistakes and failure (McCauley, 2002). Challenging work experiences appear to be the main component in developing individual work-related skills, where the rule of thumb is the "70-20-10 rule": 70% of experiences should be challenging; 20% around other people; and 10% from formal training programs (McCall, Lombardo, & Morrison, 1988; McCall, 2010). Challenging experiences need to stretch individuals past their current capabilities and require them to learn new approaches, skills, or behaviors to succeed. Experiences around other people typically involve very good or very bad bosses where the person learns different methods of interaction and their effectiveness. Formal training programs are classes or training interventions given to improve leadership skills. Challenging experiences are afforded the highest value because they "provide a platform for individuals to try new behaviors or reframe old ways of thinking and acting. Challenging work experiences put individuals in dynamic settings where they must solve complex problems and make choices under conditions of risk and uncertainty" (DeRue & Wellman, 2009, p. 860). The challenge of an experience is what drives the learning and to maximize the benefit, it should be coupled with feedback and support (DeRue & Wellman, 2009; McCall, 2010). Though the 70-20-10 rule is commonly cited and used, there appears to be little empirical testing

of it and appears to be derived from McCall et al's (1988) work on leadership experiences (McCall, 2010).

Certain experiences seem to matter more than others and different experiences teach different lessons (McCall, 2010). Roughly classified as early work experiences; short-term assignments; major line assignments; other people (usually exceptionally good or bad bosses); hardships of various kinds; and other miscellaneous events including formal training programs, they each generally offer similar lessons though what is learned is still dependent on the person (McCall, 2010). Summarizing the work done by the Center for Creative Leadership, McCauley, Moxley, and Velsor (1998) propose six main capacities leaders should acquire and develop through experience: self-awareness; self-confidence; the ability to take a broad, systematic view; the ability to work effectively in social systems; the ability to think creatively; and the ability to learn from experience.

Experience has been demonstrated to be an essential part of becoming effective in leadership and management roles. Since experience may be the main source of learning how to lead and manage, and if leadership and management changes moving up the levels of the organizational hierarchy, it is important to understand what experiences may be crucial to becoming effective at each level.

## Research Questions

To better understand the dynamic nature of leadership and management along the organizational hierarchy, it is important to identify potential changes in personality,

cognitive ability, and experiences that contribute to being effective at each level. In addition to examining changes in individual differences, it is important to analyze changes in behavioral competency ratings as assessed by 360-degree feedback. The competencies are intended to reflect the behavioral performance requirements of leadership and management roles. Examining how these may change in mean rating and rank order can offer insights into changes in the performance requirements for each level of the hierarchy. Though theory and the job analytic literature give hints and some light on what these potential changes may be, more detailed analyses need to be conducted to provide a more complete picture. The objective of this dissertation is to illuminate the differences between levels in these four domains and whether there are also changes in the determinants of performance. This study will research the following questions:

1. Do mean scores differ between the bottom, middle, and top levels for self-ratings of personality, measures of cognitive ability, experiences, and behavioral competencies?

   *Hypothesis 1:* It is hypothesized that there will be significant differences between levels across all four of the predictor domains.

   a. For personality and following results from Guilford (1952), Kuncel (1997), and Ones and Dilchert (2009), the top level will score highest across all variables, the middle level will be next, and the bottom level will score lowest across all ten personality variables. Each personality variable has been scored so that higher scores represent typically more desirable characteristics of the scale. This has resulted in two scales being

reverse scored: Withdrawal and Derailing Leadership. Volatility is not reverse scored but higher scores do represent more desirable characteristics: less volatile, more in control.

b. For cognitive ability and following the results from Kuncel (1997) and Ones and Dilchert (2009), the top level will score highest across all measures, the middle level will be next, and the bottom level will score lowest across all cognitive ability measures.

c. For developmental experiences, scores will be highest for the top level, the middle level will be next, and the bottom level will score lowest.

d. For both sets of competencies derived from 360-degree feedback, those defined by PDI in the PROFILOR and the Campbell factors created for this study, scores will be highest for the top level, the middle level will be next, and the bottom level will score lowest.

2. Given the mean scores within-level for personality, cognitive ability, experiences, and competency ratings, are adjacent level profiles (bottom-middle and middle-top) more similar than levels further apart (i.e. bottom-top)? For example with personality, the pattern, shape, and elevation of the profile of mean scores for the personality dimensions at the bottom level will be compared to the profile of mean scores for personality at the middle and top levels to determine whether adjacent levels are more similar to each other than non-adjacent levels. This will be done separately for each

of the four predictor domains, personality, cognitive ability, experiences, and competencies.

*Hypothesis 2:* Following work done by Dai et al (2010) summarized above, it is hypothesized that adjacent levels (bottom-middle & middle-top) will be more similar than levels at greater distances from each other (bottom-top) for each of the four predictor profiles (personality, cognitive ability, experiences, behavioral competencies).

3. Does the rank order of raw score mean ratings of competencies, as indicated by ratings from others in 360-degree feedback, vary by level? That is, are the competencies rated lowest and highest in terms of a manager's competence in the behavior, compared to the other competencies within a level, different across levels in terms of their rank order and their substantive content?

   *Hypothesis 3:* Following work by De Meuse et al (2011) and Mumford et al (2007) summarized above, it is hypothesized that competencies change across levels not only in their mean ratings, but in the substantive content of what managers are rated highest and lowest in terms of competence for each level.

   a. For the original PROFILOR factors, it is hypothesized that the levels will differ in their rank order of raw mean scores.
   b. For the Campbell factors at the bottom level, the competencies with the highest scores (highest rated competence) will be focused around general

job performance competencies and directive, planning, and goal setting competencies.

c. For the Campbell factors at the middle level, competencies with the highest scores (highest rated competence) will be focused around communication, collaboration, and leadership competencies about emphasizing goals.

d. For the Campbell factors at the top level, competencies with the highest scores (highest rated competence) will be focused around decision making, planning and budgeting, empowering others, and training and coaching.

4. In addition to differences in means, does the rank order of the magnitude of change for competencies and experiences change when comparing the two transitions: bottom to middle and middle to top? In other words, does the rank order of difference scores (largest change to least amount of change in mean scores between two levels) between the bottom-middle levels for competencies and experiences differ from the rank order of difference scores between the middle-top levels?

   *Hypothesis 4:* Breaking the rank order of competencies and experiences into quadrants for the two transition periods, it is hypothesized that the group of competencies and experiences experiencing the greatest increase in their raw score mean ratings from bottom to middle levels of management will be

qualitatively different than those showing the greatest increase in their raw score mean ratings from the middle to top levels of management.

a. For the transition from bottom to middle management, experiences showing the greatest change will be largely in the general management and personal or career related experiences categories.
b. For the transition from the middle to top management, experiences showing the greatest change will be largely in the overcoming challenges and risky or critical experiences categories.
c. For the transition from bottom to middle management, the PROFILOR competencies showing the greatest change will be around management and communication.
d. For the transition from middle to top management, the PROFILOR competencies showing the greatest change will be around leadership and organizational knowledge.
e. For the transition from bottom to middle management, the Campbell competencies showing the greatest change will relate largely to management factors such as coordinating multiple groups, planning, and monitoring effectiveness.
f. For the transition from the middle to top management, the Campbell competencies showing the greatest change will relate to leadership factors such as goal emphasis and empowering others.

5. What are the primary performance determinants at each level? That is, what are the correlations at the bottom, middle, and top levels of management when using personality, cognitive ability, experiences, or competencies to predict performance?

   *Hypothesis 5:* Following work by Guilford (1952) and Kaiser et al (2011) summarized above, it is hypothesized that the primary performance determinants, i.e. strongest correlations, will vary depending on level when predicting performance for each of the predictor domains.

   a. For personality, it is hypothesized that the strength and number of significant correlations with performance will increase moving up the hierarchy and that personality will show stronger relationships to Overall Leadership than Overall Management Performance.
   b. For cognitive ability, it is hypothesized that the strength and number of significant correlations with performance will decrease moving up the hierarchy and that cognitive ability will show stronger relationships with Overall Management than Overall Leadership Performance.
   c. For experiences, it is hypothesized that strength and number of significant correlations with performance will increase moving up the hierarchy and that experiences will show stronger relationships with Annual Salary than the other performance measures.
   d. For the PROFILOR competencies from 360-degree feedback, it is hypothesized that the strength and number of significant correlations will increase moving up the hierarchy.

e. For the Campbell competencies from 360-degree feedback, it is hypothesized that the strength and number of significant correlations will vary depending on the level and that the leadership competencies will be show stronger relationships to Overall Leadership than Overall Management while the management competencies will show stronger relationships to Overall Management than Overall Leadership.

6. Given the within-level correlations between personality, cognitive ability, experiences, and competencies with performance, are the predictor-performance correlation profiles between adjacent levels (bottom-middle and middle-top) more similar than levels further apart (i.e. bottom-top)? For example with personality, the pattern, shape, and elevation of the profile of correlations for the personality dimensions with performance at the bottom level will be compared to the correlations for personality-performance at the middle and top levels to determine whether adjacent levels are more similar to each other than non-adjacent levels. This will be done separately for each of the four predictor domains with four of the performance factors: Overall Management, Overall Leadership, Overall Performance, and Annual Salary.

*Hypothesis 6:* It is hypothesized that adjacent levels (bottom-middle & middle-top) will be more similar than levels at greater distances from each other (bottom-top) for each of the predictor-performance correlation profiles (personality, cognitive ability, experiences, and competencies).

7. Do the personality facets predict performance beyond cognitive ability and does the amount of incremental variance explained by personality change depending on the management level? In other words, does personality act as a better predictor of performance, after accounting for cognitive ability, for any level over another?

   *Hypothesis 7:* It is hypothesized that personality will add incremental variance to the prediction of performance and how well it predicts beyond cognitive ability will vary depending on the level being examined. Specifically, personality will predict more variance in performance beyond cognitive ability at higher levels of management.

8. Does level moderate the relationship of the predictors with performance? In other words, does a predictor variable's relationship with performance depend on what level is examined?

   *Hypothesis 8:* It is hypothesized that level will moderate the relationship between the predictor variables and performance. Specifically, the variables to be assessed are: Intellect, Enthusiasm, Compassion, the Watson-Glaser, four competencies from Campbell's leadership factors, and three competencies from Campbell's management factors. These will be assessed predicting four performance factors: Overall Performance, Overall Leadership, Overall Management, and Annual Salary.

## Method

To answer the research questions, four main sets of analyses were conducted to identify differences between bottom, middle, and top management levels: 1) comparisons of mean scores; 2) predictor correlations with performance ratings; 3) multiple regression examining personality's incremental variance beyond cognitive ability when predicting performance; and 4) a test of level as a moderator of the predictor-performance relationship. The means for self-ratings of personality, scores of cognitive ability measures, self-reported amount and frequency of experiences, and average "other" ratings of behavioral competencies derived from 360-degree feedback were compared by individual *t*-tests to find any significant differences between any two pairs of levels (bottom-middle, middle-top, and bottom-top). Euclidean Distance was calculated to determine whether adjacent levels are more similar than levels further apart for their profiles of mean scores. In addition to analysis of mean differences, the rank orders of raw mean scores within levels were compared across levels. The rank order of the amount of change for raw mean scores between bottom-middle and middle-top was also compared. Rank orders for raw score means were compared for the two sets of behavioral competencies: the original PROFILOR factors and factors created for this study corresponding to Campbell's (2012a) synthesis of the leadership and management research literature. Rank orders for the difference, i.e. amount of change in raw mean scores between levels, were compared for the two sets of competencies as well as experiences.

To examine how predictor-performance relationships may change by level, correlational analyses were conducted to find the variables most highly related to performance for each domain at each level. Two types of measure of performance were used: ratings of effectiveness taken from assessment centers and a measure of annual salary. Hierarchical regressions were conducted for each level controlling for cognitive ability to examine any incremental effects of personality when predicting four of the performance factors: Overall Leadership, Overall Management, Overall Performance, and Annual Salary. For each level, the Watson-Glaser was input as the control variable and then a personality facet was added to evaluate whether it accounted for incremental variance in the performance factor. Each level has a prediction equation for each personality facet predicting each of the four performance factors controlling for scores on the Watson-Glaser.

Finally, hierarchical regressions using a subset of variables were run to assess the main effects of specific predictor variables beyond level and whether level moderates any relationships with performance. A subset of variables was used to limit the chances of finding random relationships and were chosen based on their definitions, not on any analysis of the data. The predictor variables assessed were Intellect, Enthusiasm, and Compassion from personality; the Watson-Glaser from cognitive ability; four of the Campbell leadership competencies: Consideration, Support, Person-Centered; Initiating Structure, Guiding, Directing; Empowerment, Facilitation; and Training, Coaching; and three of the Campbell management competencies: Decision Making, Problem Solving, & Strategic Innovation; Goal Setting, Planning, Organizing, & Budgeting; and

Coordination. The performance variables evaluated were Overall Performance, Overall Leadership, Overall Management, and Annual Salary. To test moderation in hierarchical regression, first the hypothesized moderator is entered into the regression equation, in this case level, where a score of 1 = bottom management, 2 = middle management, and 3 = top management. Next, the predictor variable is entered and finally the interaction term, the proposed moderator multiplied by the predictor, is added. Changes in $R^2$ are examined to determine if there are any main or interaction effects. A main effect is indicated when the predictor variable explains additional variance beyond that of the moderator (level). Moderation is indicated by the interaction term explaining incremental variance beyond that of the moderator and the predictor. Separate equations were computed for each of the chosen predictor variables to predict performance as well as for each of the performance variables.

**Sample**

A large archival database was acquired from Personnel Decisions International Ninth House (PDI9th), a Korn/Ferry company, of managerial data across the three main organizational levels and consisting of the four domains: personality, cognitive ability, experiences, and competencies (360-degree feedback). The sample consisted of 4545 total managers though only 4108 provided an indication of level: 1124 bottom-level managers, 2106 mid-level managers, and 878 top-level managers from hundreds of different organizations and spanning several industries and functions. However, for any given variable, the number of cases varied due to missing data, limited participation in

assessment centers, or individuals may not have taken some or any of the individual assessments (personality, cognitive ability, experiences, 360-degree feedback). In combining the multitude of datasets, several of the codings for level were not equivalent (e.g. an individual would be coded at the bottom-level in one dataset and mid-level in another) where level was coded 1 = bottom management, 2 = middle management, and 3 = top management. In these cases, the lower level was chosen because this was the level the individual was located when the assessments first began. This resulted in 543 recodings, or 13% of the dataset.

## Measures

**Personality.** The personality instrument used was the Global Personality Inventory (GPI), a cross-cultural measure of personality specifically designed for the workplace with the purpose of assisting in selection, coaching, feedback, training and development, and succession planning (Personnel Decisions International Corporation, 2001). The instrument consists of 300 5-point Likert-scaled items (strongly disagree to strongly agree) intended to measure several different work behaviors including but not limited to: "an individual's tendency to be good at solving problems, planning and executing projects, assuming a leadership role, engaging in dysfunctional behaviors when working in a leadership role, getting along with others, working at a high level of energy, working independently, working cooperatively with others, and controlling one's attitudes and emotions" (Personnel Decisions International Corporation, 2001, p. 1). The 300 items are broken into nine GPI "Performance Factors" and 37 GPI Facet Scales.

Reported reliabilities for the nine scales range from .75 to .91, with an average reliability of .85 while reported correlations with performance range from .14 to .30 (Personnel Decisions International Corporation, 2001). Further validation was conducted to assess the GPI's convergent validity with that of the traditional Five Factor Model (FFM). Thirty of the 37 facets are broken into the five factors of Extraversion, Agreeableness, Openness, Conscientiousness, and Neuroticism. In factor analyses, factor and item congruence coefficients were above .90 across several samples and cultures. This indicates the GPI is an adequate personality measure and comparable to similar measures assessing the five factors.

For simplicity and ease of analyses and understanding the results, the 37 facets were not used nor were the five traditional factors. Instead, a 10-factor solution was used breaking the FFM into nine dimensions along with using the Derailing Leadership facet as the $10^{th}$ factor. Recent research by DeYoung, Quilty, and Peterson (2007) argues for the benefits of such a model: one that provides factors in between the FFM and the multitude of facets beneath them. They argue this model is less arbitrary and more parsimonious than facets while being more distinct than the five factors. The nine factors are as follows: from Openness: Intellect; from Extraversion: Enthusiasm and Assertiveness; from Agreeableness: Compassion and Politeness; from Neuroticism: Withdrawal and Volatility; and from Conscientiousness: Industriousness and Orderliness. By using a 10-factor solution, it provides more specific interpretations of results than the FFM without getting bogged down in the detail and complications of the facets. In addition, the model nests into the traditional five factors and therefore corresponds and

fits into the larger personality and leadership literature. In addition, based on the derailment literature summarized by Hogan et al (2010) and its importance in transitions as discussed above, the GPI Performance Factor of Derailing Leadership, consisting of five of the GPI facets, was also used. Reliabilities were not available for the nine factors but for Derailing Leadership it is .84. Correlations with performance for the FFM and Derailing Leadership are: Extraversion = .30, Agreeableness = .22, Conscientiousness = .25, Neuroticism = .14, Openness to Experience = .17, and Derailing Leadership = -.19 (Personnel Decisions International Corporation, 2001). These correlations indicate the FFM is a good starting point and separating them into the proposed factors may result in more interpretable or stronger results. Table 3 displays how the GPI facets are broken into the ten factors used in this study, reliabilities for the individual 37 facets, and definitions for each of the 37 facets.

**Cognitive ability.** Cognitive ability was assessed with several instruments, often depending on the organization being tested. The tests used were the Watson-Glaser Critical Thinking Appraisal, Wesman Personnel Classification Test, and the Employee Aptitude Survey. The test an individual took was typically dependent on the organization where he or she worked although several individuals completed multiple cognitive ability tests. The Watson-Glaser is intended to predict judgment, problem solving, and creativity. Its reliabilities ranged from .75 to .93 across eight different samples with sample sizes ranging from 169 to 1546. Studies analyzing criterion-related validity for the Watson-Glaser have found correlations with various measures of job performance ranging from .16 to .59 (Pearson, 2012). The Wesman is intended to measure verbal

reasoning and across several samples, reliability estimates ranged from .78 to .86. Correlations of the Wesman with measures of performance range from .04 to .50 with an unweighted average of .25 (Pearson, 2007). The Employee Aptitude Survey (EAS) measures a total of ten abilities, but only four specific abilities and the overall EAS scores were included in the dataset. The specific abilities assessed were verbal, spatial, numerical, and vocabulary. Reliabilities for the EAS scales range from .75 to .91 and a meta-analytic study found correlations ranging from .16 to .67 with job performance in managerial, professional, and supervisory jobs (Ruch, Stang, McKillip, & Dye, 1994). All three of the cognitive ability measures were used in the analyses comparing mean scores and correlations with performance. However, due to several cases only having scores on one or two of the cognitive ability measures, only the Watson-Glaser was used in the regression analyses testing whether personality predicted performance beyond cognitive ability and in the hierarchical regressions testing moderation.

**Leadership experiences.** To help with guiding employee leadership development, PDI constructed the Leadership Experience Inventory, a descriptive assessment designed to measure the nature, breadth, and depth of an individual's experiences allowing for comparisons between people. Because of this, it is an important measure of potential differences in experiences between organizational levels of leadership or in the magnitude of change between transitions (bottom to middle vs. middle to top). The instrument is composed of 105 items covering 23 categories in four domains. The four domains are General Management Experiences, Overcoming Challenge and Adversity, Risky and/or Critical Experiences, and Personal and Career

Related Experience as well as a fifth for Overall Experience (VanKatwyk, Laczo, & Tuzinski, 2006). Table 4 provides descriptions of the 23 categories and how they are sorted into the four experience domains. Both the four broader domains and the 23 specific categories were used in the analyses comparing means and rank orders but experiences were not used in any of the regression analyses.

**Behavioral competencies.** To assess behavioral competencies across the organizational leadership levels, data from 360-degree feedback interventions was analyzed from the "all other" ratings (boss, direct reports, and peers). All other ratings were used based on research showing that self-ratings are less accurate compared to ratings from others (Eichinger & Lombardo, 2004). PDI's PROFILOR was used as the data source; it was designed specifically to be used for and aid leadership development. The full PROFILOR consists of 135 items assessing 24 dimensions of management and leadership behavioral competencies sorted into eight broader factors along with two additional composite scores and an overall performance score. The eight factors are Thinking, Administrative, Leadership, Interpersonal, Communication, Motivation, Self-Management, and Organizational Knowledge. The composites are Empowerment and Career Issues. Definitions for each of the 24 dimensions sorted into the eight factors, two composites, and overall performance are provided in Table 5 along with reliabilities and the number of items per scale. Ratings are done on a 5-point Likert scale rating the extent to which the ratee demonstrates competence in the behaviors (1 = Not at all, 5 = To a very great extent). Internal consistency reliabilities for the average of other ratings range from .83 to .96. Correlations of the PROFILOR factors with performance criteria

such as rated potential and overall competence range from around .3 to around .8 but it is important to keep in mind these are ratings based on the use of the instrument for development (Hezlett, Ronnkvist, Holt, & Hazucha, 2006). Several versions of the PROFILOR are tailored to specific levels along the organizational hierarchy but for the purposes of this study, the LF-10 version was used because it has been administered to all levels without changes to its content.

Items from the PROFILOR were also sorted into Campbell's (2012a) model of the determinants of leadership and management performance. Because they are based on all previous research dealing with the dimensionality of leadership and management, these factors are thought to have a greater potential for showing differences in leadership and management competencies between organizational leadership levels. Two individual raters sorted the items into the categories and then discussed any differences. Through discussion and analysis of the factors, agreement was reached upon the final sorting of items into the factors. One management and one general factor were not used as no items were deemed to fall within the "Staffing" or "Counterproductive Work Behavior" categories leaving a total of 16 competencies: three general job performance factors, six leadership factors, and seven management factors. An Overall Leadership and Overall Management score made up of the averages of the sub factors within each principal factor were also calculated. Though the data was not used to determine this model, confirmatory factor analysis was attempted to evaluate the model's fit in terms of internal structure and content.

**Performance criteria.** To determine whether any differences between leader or management levels relate to effectiveness in those roles, the performance of individuals at each level needs to be evaluated. Though organizational performance review data would be ideal, it was not available. Instead, assessment center ratings across seven performance factors were used as indications of leader or manager performance and effectiveness as well as data on annual salary. Data from three different assessment centers were used where the assessment center an individual went through was often based, though not entirely, on their position along the organizational hierarchy. The assessments were used primarily for developmental purposes as part of leadership training programs and consisted of several activities, primarily: an interview, direct report meeting, team meeting, and an in-basket exercise. Some assessments, especially for higher levels, included additional activities such as a customer meeting, boss meeting, peer meeting, business review exercise, and/or a financial exercise. Each activity was rated in terms of the participant's demonstration of a specific performance dimension and the rating of each performance dimension consisted of the ratings for several activities. In addition to the corresponding activities, the dimension rating often, but not always, included the participant's test scores on specific personality facets or from certain cognitive ability measures. For example, a performance dimension of "Uses Sound Judgment" would likely include scores on a cognitive ability measure such as the Watson-Glaser and potentially a facet of personality such as "Thought Focus." The performance dimensions were categorized into seven performance factors and the scores within each category were averaged to arrive at the overall performance factor scores.

Information on which personality facets and cognitive ability measures were included in ratings and for which performance dimensions was not available though it is known they were not included in all dimension ratings. This means the assessment center performance criteria is contaminated – what is used to predict performance is also included in the criteria – which would result in stronger relationships than is actually the case. However, it is important to remember that when used, personality and/or cognitive ability data was only one of several scores and ratings used to arrive at scores for the performance dimensions and the majority of the dimension scores were based on the tasks or activities of the assessment center. This does not eliminate the effect including predictor information in the criteria may have on any relationships that may be found, but it does decrease it.

The performance factors assessed were labeled as Thinking or Judgment, Management or Strategy Management, Leadership, Interpersonal, Communication, Motivation, and Self-Management or Adjustment. Descriptions of the performance factors can be found in Table 6. An overall performance score was calculated by averaging each individual's scores across their rated performance factors. Combinations of the seven performance factors into condensed, broader dimensions such as Leadership and Management were explored via exploratory factor analysis. Four exploratory factor analyses were conducted: one including the entire sample and then separate analyses for each of the three levels. The factor loadings were compared across the four analyses to determine the most appropriate, if any, combinations of the seven performance factors into broader dimensions.

## Analyses

The main research objective was to determine whether the pattern of personality scores, cognitive ability scores, experience data, and behavioral competencies, as well as their predictive validities, would vary by organizational level. To determine this, analyses were conducted to compare mean differences between levels as well as regressions predicting performance to determine changes in the determinants of performance. A test of moderation was also conducted to determine whether any relationships with performance were dependent on the level examined.

**Data preparation.** Prior to the analyses testing the hypotheses, the requisite variables were computed. Factor analyses were first conducted to determine how the personality variables would be sorted into the proposed 10-factor personality structure, to evaluate the model fit of the item sort into Campbell's (2012a; 2012b) leadership and management behavioral competencies; and to determine whether the seven assessment center performance factors could be sorted into broader dimensions. Variables were also transformed into Z-scores to arrive at standardized variables with means of 0 and standard deviations of 1 allowing for easier comparison within and across variables and a better understanding of the meaning of scores.

***Factor analyses.***

*Personality.* For personality, data from PDI9th House was in the form of scores for the 37 facets of the GPI. To calculate scores for the 10 factors described above, the 37 facets were first factor analyzed using principal components exploratory factor

analysis with varimax rotation. Analysis of the factor loadings, discussions of interpretability of factors, and correspondence to prior research on the facets of the FFM led to the final sorting of the facets into the 10 factors used in the study. There were a few instances where facets were not sorted onto the factors they loaded highest. Desire for Achievement and Desire for Advancement consistently loaded on the Extraversion dimension but were placed into the Conscientious factor of Industriousness. This decision was based on DeYoung et al's (2007) results and description of the factor as well as research by Costa, McCrae, and Dye (1991), Roberts, Chernyshenko, Stark, and Goldberg (2005), and Jackson, Paunonen, Fraboni, and Goffin (1996) showing that achievement-oriented behaviors are typically found as part of the Conscientiousness dimension. This decision also ensured multiple facets for each factor. Other slight changes were made based on the factor analysis. DeYoung et al's (2007) factor of "Politeness" was renamed "Teamwork" as it was only composed of two factors related to working with others: Independence and Interdependence. The Extraversion dimension did not readily separate into two factors and therefore the GPI facets were sorted into the two factors based on DeYoung et al's (2007) results and descriptions. DeYoung et al's (2007) second Openness factor named "Openness" was not used as no facets were deemed to correspond to the intended description of the factor as relating to feelings, aesthetics, values, and imagination. To correspond with the other eight factors, two factors were reverse scored so that higher scores represented the more positive aspects and behaviors of the factors. These were Withdrawal and Derailing Leadership – the higher the score the *less* withdrawal or derailing behaviors. For Volatility, though the

name suggests the need to be reverse scored, it was not necessary and high scores do represent more positive behaviors: tolerant of stress and in control of emotions. After reverse scoring Withdrawal and Derailing Leadership, higher scores for all ten factors represented more positive behaviors and aspects of the personality facets. The final sorting of the facets into the 10 factors can be seen in Table 3.

*Campbell behavioral competencies.* For the Campbell (2012a; 2012b) factors, first an item sort into the leadership, management, and general job performance dimensions was conducted. Disagreements were discussed and a final set of factors agreed upon. Some factors were not used as no items were deemed to fall within those categories. These were the Management factor of "Staffing" and the General Job Performance factor, "Counterproductive Work Behavior." All items were used. The median reliability for the 16 factors was .90, indicating a strong degree of reliability across the factors. Confirmatory factor analysis was attempted to determine model fit and potential broader dimensions when combining the factors. LISREL was used to conduct the analyses but could not complete the factor analysis as many of the factors were too highly correlated producing a non-positive definite matrix. The 16 Campbell factors were still used in subsequent analyses as they were deemed to offer important categorical distinctions of the 360-degree ratings of behavior. Definitions of each factor, along with the number of items comprising each competency are provided in Table 1 while reliabilities are provided in the intercorrelation matrix in Table 12.

*Assessment center performance factors.* Exploratory factor analyses were conducted to identify potential combinations of the Assessment Center performance

factors into broader performance dimensions. Each of the three assessment centers provided ratings of seven different performance competencies. Though a few of the competencies were labeled differently, they assess the same underlying constructs. The seven competencies were labeled Thinking, Management, Leadership, Interpersonal, Communication, Motivation, and Self-Management. Descriptions of each performance factor are available in Table 6. Principal components factor analysis with varimax rotation was used to conduct four exploratory factor analyses: one using the entire dataset and three separating the three organizational levels. The factor loadings were compared to assess potential combinations of the seven factors into broader dimensions. Results revealed a strong four-factor solution for each of the four analyses where Leadership, Interpersonal, and Communication collapsed into an Overall Leadership Performance factor while Thinking and Management collapsed into an Overall Management Performance factor. Both Motivation and Self-Management remained distinct factors.

***Z-scores.*** Once the variables were confirmed via factor analyses, the variables were transformed into Z-scores. To calculate Z-scores, the mean and standard deviation of the population, in this case the entire leader/manager database, were calculated for the specific variables. The population mean was then subtracted from each observed score and this number was divided by the population standard deviation to arrive at a Z-score. By using standardized Z-scores, it can make comparing variables easier and differences easier to understand. With the personality variables, the corresponding GPI facet scores for each factor of the 10 factors were summed into their corresponding factor and the factor was normed against the entire dataset. This produced the Z-scores that were used

in the subsequent analyses. Cognitive ability scores were not combined in any way but were normed and transformed into Z-scores. Experience data from the LEI was previously combined into the four domains. Scores for both the four domains and 23 categories were normed against the dataset to get the Z-scores used in subsequent analyses.

The behavioral competencies were derived from the average score ratings from "other" raters on the PROFILOR and two different sets of factors were used: 1) the original PROFILOR competencies developed by PDI9th House; and 2) the leadership, management, and general job performance competencies proposed by Campbell (2012a; 2012b) and created from the PROFILOR items. To calculate scores for the PROFILOR factors, facets were summed into their corresponding eight factors. Scores for the eight factors, as well as the three composites (Empowerment, Career Issues, Overall Performance), were normed against the entire dataset. This produced the Z-scores used in the analyses. Though the confirmatory factor analysis was unsuccessful in evaluating the fit of the item sort into the Campbell factors, the reliabilities were strong and the factors were deemed to offer important categorical distinctions. Therefore, the items were summed for each factor and normed against the entire dataset to produce the corresponding Z-scores. An additional two factors were created, Overall Leadership and Overall Management, which were the averages of their respective sub-factors. These were also normed to produce Z-scores.

For the performance criteria, Z-scores were computed for both the original seven factors as well as the four-factor solution found by the factor analyses. In addition to the

seven and four-factor sets, an overall performance factor was computed by averaging an individual's scores across the seven competencies. All scores were normed and transformed into Z-scores. Another performance indicator, Annual Salary, was used in the correlation and regression analyses but not in mean comparisons. Annual salary was not transformed into a Z-score and was scored from 0 (a salary of less than $20,000) to 15 (equal to or greater than $500,000).

**Statistical analyses.**

***t-tests.*** After preparing the data and creating the factors to be used, analyses were conducted to determine the mean differences between the three levels: bottom, middle, and top. To do this, *t*-tests were used to identify which variables differed significantly and for which comparisons: bottom-middle, middle-top, and bottom-top. Identifying how variables differ, whether they differ between bottom-middle, middle-top, and bottom-top, or only between bottom-middle or middle-top, is an important distinction to make as some variables may be different between bottom and middle management but not top-level managers, or there is no difference between bottom and middle management but the variable differs between the middle and top levels. Since the reported scores are all Z-scores, effect sizes are not presented but may be computed by calculating the difference score between any two levels to arrive at an index of the magnitude of the differences between levels.

***Euclidean distance of mean profiles.*** Beyond determining what changes there are in mean ratings, similarity analyses were conducted to evaluate whether adjacent levels are more similar in their pattern of scores than levels further apart. To do this,

Euclidean Distance was calculated for each between-level comparison (bottom-middle, middle-top, and bottom-top) and separately for each predictor domain: personality, cognitive ability, experiences, and behavioral competencies. Euclidean Distance was the most appropriate measure as it takes into account the shape, elevation, and scatter of scores when comparing profiles (Cronbach & Gleser, 1953). It is lower-bound by 0, indicating perfect similarity, with higher values indicating how dissimilar the compared variables or profiles are. However, there is no upper-bound estimate which prevents conclusions on the degree of similarity or dissimilarity. Assessing the degree of similarity is unnecessary for this study as only whether a distance is larger or smaller than the others within a predictor domain is important to answering the research question of the similarity of adjacent levels compared to non-adjacent levels. Euclidean Distance was calculated separately for each predictor profile of mean scores and for each between-level comparison.

***Rank orders.*** In addition to the distance measures, several rank orders of the raw scores were examined. First, the raw score means were ordered from highest to lowest within each level for both sets of competencies, the PROFILOR and the Campbell factors, and the Assessment Center performance factors. For example, the raw mean scores across the eight primary PROFILOR behavioral competencies were sorted in descending order within each level and these orders were compared across levels and discussed in terms of any changes in content for the highest and lowest ratings. For the competencies, the analysis of the rank order of mean ratings will give an indication of the competencies managers at a given are rated most competent in (the highest mean scores)

and the competencies managers at a given level are rated least competent in (lowest mean scores) relative to the other competencies. How the rank orders may change between levels was evaluated. To help in the examination of the rank orders, the competency ratings were separated into quadrants representing different degrees of competence: the top quadrant represents the competencies managers are rated most competent in at a given level and the bottom quadrant the least competent (relative to the other factors) at the given level. The contents of these quadrants for each level and whether/how much the content changes across levels are discussed at length. This was done separately for each of the domains.

In addition to analyzing the rank order of raw mean scores, the difference between levels, or the amount of change that occurs in the raw mean scores between any two levels, was also rank ordered from the most amount of change to least amount of change. This was done for both sets of behavioral competencies, experiences, and the Assessment Center performance factors. The difference score was calculated for all three level comparisons, bottom to middle, middle to top, and bottom to top level, but only the bottom-middle and middle-top differences were examined at length, representing the primary transitions moving up the organizational hierarchy. The difference scores were rank ordered from highest (most change) to lowest (least change) and the two transitions were evaluated to determine whether competencies or experiences with the greatest and least amount of change were different for the bottom to middle transition compared to the middle to top transition. The rank orders were broken into quadrants for easier evaluation and interpretation and differences in the substantive content of these groups of

experiences between the two transitions, bottom to middle and middle to top, are discussed.

***Correlations.*** Next, analyses were conducted to determine whether and if so, how, relationships between personality, cognitive ability, experiences, and behavioral competencies with performance change. Correlations were computed between performance and each of the predictor domains (e.g. personality) by level to identify the variables most strongly related to the measures of performance for each level and to examine how relationships may change between levels. These correlation matrices were produced separately for each level and each predictor domain. This provided predictor-performance correlations for the bottom, middle, and top levels. The correlation profiles for each level, the predictor-performance correlations for a predictor domain within-level, were also compared across levels by calculating the Euclidean Distance between any two levels. This was done to evaluate whether adjacent levels were more similar than levels further apart. For example, the Euclidean Distance was calculated comparing two levels on the pattern of personality-performance correlations with performance (i.e. the personality-performance correlation profile) separately for each performance measure. The distances between each two-level comparison were then compared to see whether the distance for adjacent levels is lower than the distance for non-adjacent levels. Three distances were calculated for each predictor-performance profile comparing bottom-middle, middle-top, and bottom-top levels, giving indications of the similarity of the patterns of relationships of the predictors with performance between adjacent versus non-

adjacent levels. This was done separately for each predictor set as well as the four chosen performance measures.

***Incremental regression of personality beyond cognitive ability.*** Beyond correlations, several multiple regressions were conducted to determine if personality added incremental variance beyond cognitive ability, as assessed by the Watson-Glaser, and whether equations differed across levels. This was done separately at each level for each of the ten personality facets predicting four separate performance factors: Overall Performance, Overall Leadership, Overall Management, and Annual Salary. Therefore, each personality facet has an equation predicting each performance factor at each level controlling for cognitive ability as assessed by the Watson-Glaser.

***Hierarchical regression testing moderation.*** Finally, hierarchical regressions were conducted to determine whether level moderates the relationship between certain predictors and performance, i.e. does a variable's relationship with performance depend on the management level being analyzed. A subset of variables was used in this analysis to limit the probability of finding moderation effects by chance. Specifically, the hierarchical regressions were run for Intellect, Enthusiasm, Compassion, the Watson-Glaser, four competencies from Campbell's leadership factors, and three competencies from Campbell's management factors. These variables were chosen on the basis of their definitions and the author's interest in how they may be moderated, not by any analysis of the data. For the hierarchical regression analyses, level is first entered into the equation (1 = bottom level; 2 = middle; 3 = top), followed by the predictor variable, and finally the interaction term is entered – the predictor variable multiplied by the

moderator. When the predictor variable adds incremental variance beyond the moderator variable (i.e. an increase in $R^2$), there is a main effect of the predictor and it explains variance in the criterion beyond the control variable, in this case level. If the interaction term adds incremental variance beyond any main effects this indicates moderation and that the effect of the predictor variable in explaining variance in the criterion depends at least in part on the value for the moderator, i.e. management level.

## Results

Sample statistics reveal the managers are largely male (78%) and Caucasian (89%) with an average age of 41 (min = 24, max = 67) and median annual salary between $90,000-109,999. Since Z-scores were computed for the variables, overall means and standard deviations are not reported since they are all equal to 0 for the mean and 1 for the standard deviation. Intercorrelation matrices for each set of variables are provided in Tables 7 through 12. Means and standard deviations for each of the three levels across the variables are reported in Tables 13 through 18 along with the results of the *t*-tests examining differences between levels. Figures 1 through 5 present the means of the variables in a visual format to help show the nature of the differences between levels. Table 19 displays the Euclidean Distance values comparing the personality, cognitive ability, experience, and behavioral competency mean score profiles. Tables 20 through 22 present the rank orders for the raw score means of the two sets of behavioral competencies and the Assessment Center performance factors across levels. Tables 23 through 26 display the rank orders of the differences in raw mean scores between each

level comparison for the two sets of competencies, experiences, and the Assessment Center performance factors. Tables 27 through 41 show the correlations of the predictor variables and performance factors by level. Table 42 displays the Euclidean Distance values comparing the performance correlation profiles across levels for the predictor domains. Table 43 presents the results of the hierarchical regressions using cognitive ability and personality to determine the personality's incremental effect when predicting various measures of performance for each level. Table 44 displays the tests of the moderating effect of level across eleven of the predictors. A subset of variables was used to limit the probability of finding any relationships or moderating effects by chance. Though an in-depth analysis of gender differences goes beyond the scope of this study, mean differences are provided for the variables in the Appendix (Tables A-F). Additionally, the Appendix includes correlation matrices for the relationships of personality and cognitive ability with the Campbell behavioral competencies and the PROFILOR overall performance competency for each level (Tables G-I).

**Mean Differences**

**Personality.** Table 13 and Figure 1 show the differences in personality between the bottom, middle, and top levels of management. In this table, higher scores represent the positive or typically beneficial behaviors and aspects of each facet. As can be seen in Table 13, many of the scales show significant differences between levels and Hypothesis 1a was largely supported: each facet increases across levels. Examination of the variables reveals a few patterns. For several personality facets there was no significant

difference between the bottom and middle levels but the top level differed significantly from both lower levels. This occurred for Intellect, Assertiveness, Enthusiasm, Withdrawal, and Industriousness. Teamwork was the only personality facet to differ significantly for each level comparison (bottom-middle, middle-top, bottom-top) while Volatility was the only facet found not to differ significantly across levels. All scales showed increases, though not all statistically significant, in the average score across the three levels of the organizational hierarchy supporting Hypothesis 1a.

**Cognitive ability.** Table 14 and Figure 2 show the mean differences for the measures of cognitive ability between levels and test Hypothesis 1b that cognitive ability will increase across levels. There were only two significant differences: for the Wesman between the bottom and middle levels and for the EAS Total score between the middle and top levels. The difference on the Wesman shows a decrease in the average cognitive ability of managers between the bottom and middle levels – the opposite of what was hypothesized. The difference on the EAS Total score shows an increase in the average of scores for managers between the middle and top levels. Interestingly, the Watson-Glaser showed no significant differences and examination of the means show it had the least amount of any discernible change between levels across the cognitive ability measures. Even though two significant differences were found, this is equivalent to what would be expected to be found by chance and the effect size between any two levels on the cognitive ability measures is very small. These results fail to support Hypothesis 1b.

**Experiences.** Table 15 and Figure 3 show the mean differences for the scores across levels on the Leadership Experience Inventory testing Hypothesis 1c that

experiences increase across levels. Nearly every category of experience displayed significant differences between all three levels: bottom-middle, middle-top, and bottom-top. However, a few did not. Business Development & Marketing, Self-Development, and Extracurricular Activities were significantly different between the bottom and top and middle and top levels but not between the bottom and middle. International/Cross Cultural was the only experience that was not significantly different between any of the levels. All scores did increase moving up the organizational hierarchy, with the majority showing statistically significant differences, supporting Hypothesis 1c.

**PROFILOR behavioral competencies.** Table 16 and Figure 4 show the mean differences for the PROFILOR scores between levels testing Hypothesis 1d that the PROFILOR competencies will increase by level. Several of the factors had significant mean differences all supporting Hypothesis 1d. Three factors increased significantly across all three levels: Thinking, Motivation, and Organizational Knowledge. The majority of factors showed significant increases from the bottom level to the other two but no significant increase from the middle to top levels. Self-Management and Overall Performance were the only two factors to not differ significantly between any level comparisons. Examination of the mean scores shows increases, though not always statistically significant, for each factor across levels except for Overall Performance. These results largely support Hypothesis 1d.

**Campbell behavioral competencies.** Table 17 and Figure 5 display the mean differences for the Campbell factors between levels also testing Hypothesis 1d. Several differences were statistically significant further supporting Hypothesis 1d. Three factors

increased significantly across all three levels: Initiative, Persistence, & Effort; Goal Emphasis; and Decision Making, Problem Solving, Strategic Innovation. The majority of factors showed significant mean increases from the bottom to the other two levels but did not increase significantly between the middle and top. These factors corresponded to one general job performance factor, three leadership factors, and five management factors. Two factors' only significant increase was from the bottom to top levels: Technical Performance, a general job performance factor, and External Representation, a management factor. The leadership factor, Initiating Structure, Guiding, Directing, showed one significant difference between the bottom and middle levels. One leadership factor showed no significant differences: Consideration, Support, Person-Centered. Examination of the mean scores shows all but one factor increased across levels though these increases were not all statistically significant. These results support Hypothesis 1d.

**Assessment center performance factors.** Table 18 and Figure 6 display the mean differences for the performance factors from the Assessment Centers including three overall scores: one for leadership, management, and an overall across all seven factors. In addition to Overall Performance, results of the exploratory factor analyses revealed four main performance factors: Motivation, Self-Management, Overall Leadership, and Overall Management. No hypotheses were made regarding performance scores but it would be expected that higher levels score higher since they have reached those levels and it can reasonably be assumed that those promoted and reaching higher levels typically display a higher level of competence and performance than those at lower levels. Two of the broader factors showed significant increases across all three levels:

Overall Leadership and Overall Performance. Following the pattern of many of the behavioral competencies, the Self-Management performance factor showed significant increases between the bottom and middle and bottom and top levels but not between the middle and top levels. The main increase for Overall Management occurred between the middle and top levels. The only factor to not differ significantly was Motivation. When examining the means, all the main performance factors scores increased moving up the organizational hierarchy, though not all increases were significant between every pair of levels.

**Mean Profile Similarity**

Table 19 presents the Euclidean Distances for the mean score profiles testing Hypothesis 2 that bottom-middle and middle-top level comparisons will show more similarity than comparing the bottom-top levels. Hypothesis 2 was largely supported: across the profiles, the bottom-top comparison showed the highest Euclidean Distance indicating a greater amount of dissimilarity. However for the pattern of cognitive ability scores at each level (i.e. the profile), the distance value comparing the bottom and top level profiles was lowest indicating the non-adjacent levels were more similar than the adjacent levels, failing to support Hypothesis 2. Examination of Figure 2 supports this as it can be seen the pattern of scores for the bottom and top levels resemble each other more in terms of the distance between the mean scores and their fluctuations than when comparing the middle to either level. Therefore, Hypothesis 2 was only partially supported.

**Rank Order Comparisons of Mean Scores**

**PROFILOR behavioral competencies.** Tables 20 through 22 display the rank orders of the raw mean scores between levels for the 360 PROFILOR factors, 360 Campbell factors, and the Assessment Center performance factors. Table 20 displays the rank orders for the PROFILOR factors by level testing Hypothesis 3a. Only one change occurs: the Administrative and Leadership factors switch spots when comparing the middle and top levels, moving from the 7th and 8th spots respectively to 8th and 7th. The remaining factors maintained their rank order across levels. Despite one change occurring, it is minor and both factors remain at the very bottom of the rank order. Therefore, the results fail to support Hypothesis 3a that the rank order changes across levels.

**Campbell behavioral competencies.** Table 21 displays the rank orders for raw mean scores of the Campbell factors by level testing Hypotheses 3b through 3d. The top ranked factors at the bottom level were the three general job performance factors, decision making, and compliance. These results support Hypothesis 3b. However, the overall rank order remained largely the same across levels and therefore Hypotheses 3c and 3d were largely not supported. Despite the majority of the factors maintaining their rank order across levels, there were three minor changes that did occur: Communication and Decision Making switched spots between the middle and top levels (4th and 5th respectively to 5th and 4th); Consideration and Goal Emphasis switched spots between the bottom and middle levels (6th and 7th to 7th and 6th); and Coordination and Monitoring

Unit Effectiveness switched spots between the bottom and middle levels (13th and 15th to 15th and 13th). Though these changes partially support the overall hypothesis that the rank order of raw mean scores change between levels, they are minor and examination of the mean scores reveal very little difference indicating the change is more likely due to chance than actual changes in rank order. That Goal Emphasis increased its rank order from the bottom to middle level does support Hypothesis 3c, but again, the change is very small. Taken together, the results support Hypothesis 3b, partially support Hypothesis 3c, and fail to support Hypothesis 3d.

**Assessment center performance factors.** Table 22 presents the rank orders for the raw mean scores for Assessment Center performance factors by level. No hypothesis was made regarding any changes in rank order. As the table displays, there are only minor changes to the rank order. Between the bottom and middle levels, three changes occur: Thinking moves from 2nd to 3rd; Communication moves from 3rd to 4th; and Self-Management moves from 4th to 2nd. Between the middle and top levels, two changes occur: Self-Management shifts again from 2nd to 3rd; and Thinking shifts back into 2nd from 3rd. Overall, the shifts were small at best and the majority of factors maintained their rank order.

## Rank Order Comparisons of Changes in Raw Score Means between Levels

**Experiences.** Tables 23 through 26 display the amount of change in raw score means for experiences, the two sets of behavioral competencies, and the Assessment Center performance factors. Testing Hypothesis 4a, Table 23 shows the difference

scores, sorted from most amount of change to least, of experiences for each level comparison. Comparing the bottom-middle to the middle-top in the amount of change in raw score means does show substantially different rank orders. The experiences showing the greatest change, i.e. in the top quadrant of the rank order, from the bottom to middle level were three from the Overcoming Challenge & Adversity (OCA) category; two from Risky and/or Critical (RC); and one from General Management (GM). These results failed to support Hypothesis 4a that the most amount of change would be for the GM and Personal & Career Related (PCR) experiences. Instead, the majority of PCR experiences showed the least amount of change between the bottom and middle levels. For the transition from middle to top management, the experiences showing the greatest amount of change consisted of three from GM; two from RC; and one from OCA. This partially supports Hypothesis 4b as risky and challenging experiences make up a large part of those showing the greatest change between the middle and top levels. However, the GM experiences also make up a good portion of those displaying greater amounts of change. These results do support the general hypothesis that the rank order of change in experiences varies when comparing the difference scores for bottom-middle and middle-top transitions but fail to support Hypothesis 4a and only partially support Hypothesis 4b.

**PROFILOR behavioral competencies.** Table 24 presents the rank orders for the amount of change in raw mean scores between the bottom-middle, middle-top, and bottom-top comparisons for the PROFILOR competencies testing Hypotheses 4c and 4d. The rank orders for the amount of change in raw score means between the bottom-middle and middle-top do show differences. In support of Hypothesis 4c, Management is one of

the top two factors for most amount of change for the bottom to middle management transition. However, Communication ranks near the bottom and therefore Hypothesis 4c is only partially supported. The most amount of change between the middle and top levels was for Organizational Knowledge, supporting Hypothesis 4d. In further support, Leadership was ranked third, though it's rank order decreased compared to the bottom-middle transition. These results are in support of the hypothesis that the amount of change between levels for raw scores means is different for the bottom to middle transition than for the middle to top transition. Specifically, Hypothesis 4c was partially supported and Hypothesis 4d was supported.

**Campbell behavioral competencies.** Table 25 shows the rank order of the amount of change in raw mean scores for the Campbell competencies between the bottom to middle, middle to top, and bottom to top levels testing Hypotheses 4e and 4f. From the bottom to middle levels, the Campbell competencies showing the most amount of change (top quadrant) were from both the leadership and management categories, two from each, while expanding to include the top half of the amount of change, it is largely management factors. In support of Hypothesis 4e, Monitoring Unit Effectiveness ($1^{st}$) and Goal Setting, Planning, Organizing, Budgeting ($4^{th}$) are in the top quadrant of the factors showing the most change and three other factors from management are in the top half. From the middle to top levels, the factors changing the most come from all three categories, general job performance, leadership, and management. In support of Hypothesis 4f, Goal Emphasis displays the most amount of change, and moves up in rank order from $2^{nd}$ to $1^{st}$, while Empowerment, Facilitation is also in the top half though it

decreases in rank order from 5th to 7th. However, these are the only leadership factors in the top half of the rank order. Interestingly, all three general job performance factors are ranked in the top six for the middle to top level difference. These results support Hypothesis 4, 4e, and partially support Hypothesis 4d.

**Assessment center performance factors.** Table 26 presents the rank order of the amount of change in raw mean scores for the Assessment Center performance factors between the bottom to middle, middle to top, and bottom to top levels. No hypotheses were made regarding differences in the rank orders. As can be seen from the table, the rank orders do change considerably with no factor remaining in the same position. Major shifts occurred in the amount of change between levels for Self-Management: 2nd from bottom to middle but 8th from middle to top; Interpersonal: 3rd to 7th; and Thinking: 8th to 1st. These results show that the amount of change for the performance factors is different when comparing either bottom to middle or middle to top management.

## Differing Relationships with Performance by Level

Tables 27 through 41 show the correlations between the predictor variables and the Assessment Center performance factors as well as Annual Salary testing Hypothesis 5. Several of the predictor-performance relationships were significant across all three levels, while others were only statistically significant at certain levels. Though differences could be due to sampling error, especially for small changes in the strength of correlations, the overall strength of many of the correlations indicate they are likely significant for the specific variables. It is also important to remember that many of the

dimensions the performance factor scores are composed of include specific personality facets and/or measures of cognitive ability and therefore certain relationships may be stronger than if the performance factors were not contaminated.

**Personality-performance correlations.** Table 27 presents the personality correlations for the bottom level, Table 28 displays the correlations for the middle level, and Table 29 the top level. Across all three levels, personality most strongly related to the Motivation and Self-Management performance factors and the amount and strength of these correlations increased moving up the hierarchy. As expected, Volatility, composed of personality facets around emotional control and stress tolerance, was highly related to Self-Management, reaching a .60 correlation at the middle level. Though this is likely due to the contamination of the criteria mentioned above, it is also likely the Volatility factor would correlate highly even if there was no contamination as it deals exclusively with self-management type personality traits. For Overall Management, Overall Leadership, and Overall Performance, the strength and number of significant correlations increased overall though some of the facets that correlated changed. For example, Withdrawal only correlated with Overall Leadership at the bottom level. With Annual Salary, the strength and number of significant correlations decreased moving up the organizational hierarchy. The facets which correlated at each level also change for Annual Salary. These results suggest personality's relationship to performance changes moving up the organizational hierarchy and that it may become a stronger predictor of performance at higher levels, supporting Hypothesis 5a that the relationships between personality and performance change depending on the management level. In comparing

personality's relationship to Overall Leadership Performance versus Overall Management Performance, there were a greater number of significant correlations with Overall Leadership across levels. Therefore, Hypothesis 5a was supported.

**Cognitive ability-performance correlations.** Tables 30 through 32 show the correlations between the measures of cognitive ability and the performance factors testing Hypothesis 5b. Table 30 shows the correlations for the bottom level, Table 31 is the middle level, and Table 32 is the top. The amount of significant correlations not only decreases moving up the organizational hierarchy but what is significant changes depending on the level being examined. Every cognitive ability measure correlated with Overall Management Performance across levels though several decreased in strength moving up the hierarchy. For Overall Leadership Performance, the number of significant correlations decreased as well as their strength: though the majority of the measures correlated at the bottom and middle levels, only two measures correlated at the top level. These results suggest the relationship of cognitive ability to performance changes depending on management level and that it relates more highly to Overall Management than Overall Leadership Performance, supporting Hypothesis 5b.

**Experience-performance correlations.** Tables 33 through 35 show the correlations between the experiences from the Leadership Experience Inventory and the performance factors testing Hypothesis 5c. Table 33 displays the correlations at the bottom level, Table 34 the middle level, and Table 35 the top level. At the bottom level, over half of the experiences correlated with Annual Salary but none of them correlated with any other performance factor. At the middle level, several experiences correlated

with Motivation, Overall Leadership Performance, and Overall Performance. Annual Salary showed the strongest relationship to experience at the middle level correlating with all experiences and categories at the middle level except for Extracurricular Activities. At the top level, experiences negatively correlated with Overall Leadership, Overall Management, and Overall Performance but only a few were significant. However, with Annual Salary, several experiences at the top level displayed strong positive correlations though fewer than at previous levels. These results suggest that experiences' relationship with performance vary by level and most highly relate to salary and middle management performance. Overall, the changing nature of the relationships by level partially support Hypothesis 5c: experiences were more highly related to Annual Salary than the other performance measures however the relationships did not increase in strength or amount moving up the organizational hierarchy.

**PROFILOR behavioral competencies-performance correlations.** Tables 36 through 38 show the correlations between the PROFILOR competencies and the performance factors testing Hypothesis 5e. Table 36 displays the correlations at the bottom level, Table 37 the middle, and Table 38 the top level. For Motivation, the number of significant correlations decreased moving up the hierarchy where six factors correlated at the bottom level, four at the middle level, and three at the top level, though there were no changes in which factors were correlating, i.e. the factors that correlated at the top also correlated at the middle and those that correlated at the middle also correlated at the bottom. With Overall Management Performance, four factors correlated at the bottom level, three at the middle level, and three at the top level. The relationships also

changed by level where the factors that correlated at one level did not necessarily correlate at another. All the PROFILOR factors correlated with the Self-Management performance factor at both the bottom and middle levels, Overall Leadership at the bottom level, Overall Performance at the bottom and middle levels, and Annual Salary at the middle level. These results show that the relationships of behavioral competencies to performance change depending on the level – no factor showed the same relationships across all three levels with any of the performance criteria. However, the significant correlations of the performance factors with the PROFILOR factors also decreased overall in their number and strength moving up the hierarchy failing to support Hypothesis 5e.

**Campbell behavioral competencies-performance correlations.** Tables 39 through 41 display the correlations between the Campbell behavioral competencies and the performance factors testing Hypothesis 5e with Table 39 showing the correlations at the bottom level, Table 40 the middle level, and Table 41 the top level. For Overall Management Performance, none of the leadership Campbell factors significantly correlated but one general job performance factor, Communication, and two management factors, Decision Making and Goal Setting, correlated across all three levels. At the middle level, Technical Performance (a general job performance factor) also correlated with Overall Management and at the top level, Administrative correlated as well (a management factor). For Overall Leadership Performance the number of correlations decreased by level but the relationships also slightly changed. Every Campbell factor correlated at the bottom level except Technical Performance; while at the middle level,

two additional management factors did not correlate significantly; and at the top level, another general performance factor no longer correlated as well as a leadership factor and another management factor. However, one of the management factors that did not correlate at the middle level does at the top. For Overall Performance, all the Campbell factors correlated across all three levels except for Technical Performance and at the middle and top levels: Monitoring Unit Effectiveness (management). All the Campbell factors correlated with Annual Salary at the middle level however four leadership factors and one management factor did not correlate at the bottom level and only three factors significantly correlated at the top level: Goal Emphasis (leadership), Monitoring Unit Effectiveness (management), and Commitment, Compliance (management). The competency correlations with performance do vary by level and though the leadership factors did correlate more highly with Overall Leadership Performance than management performance, the management factors also correlated more highly with leadership performance than Overall Management. These results partially support Hypothesis 5e.

**Correlation Profile Similarity**

Table 42 presents the Euclidean Distances between each level's predictor-performance correlational profile testing Hypothesis 6 that adjacent levels will be more similar. The hypothesis was partially supported. Supporting the hypothesis, the predictor-performance relationships were more similar for adjacent levels for personality and cognitive ability across the performance measures as well as for experiences with Annual Salary. This is indicated by the lower distances between the Bottom-Middle and

Middle-Top levels versus the distance between the bottom and top levels. The personality-Annual Salary relationship failed to support the hypothesis: the Bottom-Middle profiles were less similar than either the Middle-Top or Bottom-Top comparisons. Also, the predictor-performance relationships were more similar for the non-adjacent levels for the behavioral competencies, both from the PROFILOR and the Campbell factors, across the performance measures as well as for the experience relationships with Overall Management, Overall Leadership, and Overall Performance. These distances do not support Hypothesis 6 and therefore, it was only partially supported.

**Personality Predicting Performance beyond Cognitive Ability**

Table 43 shows the results of the hierarchical regressions examining whether personality adds incremental variance when controlling for cognitive ability for each level testing Hypothesis 7. For Overall Performance, personality consistently added incremental variance beyond cognitive ability. Across levels, it also increased overall in how much variance it explained beyond cognitive ability for each of the performance measures except for Annual Salary. For Annual Salary, only the Intellect and Assertiveness facets added any incremental variance and only at the bottom level. Interestingly, a greater number of personality facets explained variance for Overall Management Performance than Overall Leadership beyond cognitive ability. However, the single greatest incremental variance across facets occurred for Overall Leadership Performance versus Overall Management Performance. The personality facet that added

the most incremental variance also varied depending on the level and performance measure being predicted. For example with Overall Performance, Assertiveness explained the most additional variance at the bottom level; Enthusiasm at the middle level; and Teamwork at the top. These results support Hypothesis 7 and not only suggest that personality helps explain performance beyond just cognitive ability, but that how well it explains variance in performance depends on the facet being examined, the management level, and the performance measure.

**Test of Level as a Moderator**

Table 44 displays the results of several hierarchical regressions testing to see if management level moderates the relationship between several predictors and four measures of performance testing Hypothesis 8. As stated above, only a subset of predictor variables were used in testing for moderation to decrease the probability of finding any moderation effects by chance. To test level's moderating effect on performance, it was entered first into the regression equations where a score of 1 = bottom level, 2 = middle, and 3 = top. Next, the predictor variable was entered and third, the interaction term: level multiplied by the predictor score. Main effects are indicated by either level or the predictor explaining variance in the performance measure. Moderation is indicated by an interaction effect which is when the interaction term explains additional variance in the performance measure. As can be seen in Table 44, several variables showed main effects beyond management level as indicated by changes in $R^2$. The largest main effects beyond management level for Overall Performance were

found for Intellect, Enthusiasm, and the Watson-Glaser. Main effects for Overall Leadership were largest for the Campbell leadership factors of Consideration, Support, Person-Centered; Empowerment, Facilitation; and Training, Coaching, as well as the Campbell management factor of Coordination. Main effects for Overall Management were largest for the Watson-Glaser. There were only small main effects when predicting Annual Salary. Only one interaction term showed any incremental variance: the Campbell management factor of Goal Setting, Planning, Organizing, & Budgeting with Overall Leadership Performance. This indicates that level does moderate the relationship of Goal Setting with Overall Leadership. Overall these results do not support Hypothesis 8 that management level moderates relationships with performance though this does not mean other variables not tested here would also fail to find a moderation effect.

**Summary of Hypotheses**

Hypothesis 1 – an increase in mean scores the higher the level: Partially supported.

a) Personality: Supported.
b) Cognitive ability: Not supported.
c) Experiences: Supported.
d) Behavioral competencies: Supported.

Hypothesis 2 – the profile of mean scores for adjacent levels are more similar than non-adjacent levels: Partially supported.

Hypothesis 3 – the rank order of means changes by level: Not supported.

a) PROFILOR: Not supported.

b) Campbell competencies, bottom level: Supported.

c) Campbell competencies, middle level: Not supported.

d) Campbell competencies, top level: Not supported.

Hypothesis 4 – the rank order of amount of change differs by level: Supported.

a) Experiences – Bottom to middle, GM and PCR: Not supported.

b) Experiences – Middle to top, RC and OCA: Partially supported.

c) PROFILOR – Bottom to middle, management and communication: Partially supported.

d) PROFILOR – Middle to top, leadership and organizational knowledge: Supported.

e) Campbell – Bottom to middle, management: Supported.

f) Campbell – Middle to top, leadership: Partially supported.

Hypothesis 5 – the correlations change by level: Partially supported.

a) Personality correlations: Supported.

b) Cognitive ability correlations: Supported.

c) Experience correlations: Partially supported.

d) PROFILOR competency correlations: Not supported.

e) Campbell competency correlations: Partially supported.

Hypothesis 6 – performance correlation profiles for adjacent levels are more similar than non-adjacent levels: Partially supported.

Hypothesis 7 – personality predicting beyond cognitive ability differs by level – Supported.

Hypothesis 8 – level moderates predictor-performance relationships – Not supported.

## Discussion

This study used a large managerial database to examine how individual differences, specifically personality, cognitive ability, experiences, and behavioral competencies, change across the three primary management levels: bottom, middle, and top. Theory (e.g. Freedman, 1998; Katz & Kahn, 1978) and job analysis research (e.g. De Meuse et al, 2011; Hedlund et al, 1999; Kaiser & Craig, 2011; Kraut et al, 1989) indicate there are important differences between levels for the determinants of performance, highly critical skills, and organizational responsibilities. The results presented here expand our understanding of these differences and the requirements of each level.

### Importance

This research is unique and important for several reasons. First, it takes a much more encompassing approach to examining the differences between levels than previous studies. Previous studies have typically focused on fewer domains, only differentiating levels on personality, job activities, or skills, etc. Though useful, these studies can present a limited view and understanding of the differences between levels. By

examining a larger range of critical individual differences, this study encompasses to a greater degree the nature of each level and the differences between them, not only in what kind of work is done, but how the *people* at each level differ in terms of personality, cognitive ability, experiences, and competence. Understanding differences in people along the organizational hierarchy can aid and guide training and development initiatives.

Second, this study examines how the determinants of performance change by organizational level. Only the Guilford (1952) and Kaiser and Craig (2011) studies examined differences in terms of how the determinants of performance may change by level. This study not only looked at how variables change in their prediction of performance, but how similar levels are to each other in terms of the patterns of their predictor-performance correlation matrices. How the determinants of performance change between levels gives insight into important differences of what is needed to perform effectively as well as where potential training and development should be focused in order to improve performance. Also, understanding the similarity between levels has implications for understanding the transitions between levels – when levels are less similar it is likely more training and development will be needed to prepare the person for the requirements of the next level.

Third and finally, this study examines the rank orders of means and amount of change between levels of behavioral competencies and experiences across levels. Examining the content of variables and how they change relative to other variables in the same domain allows for a broader understanding of what may require more or less development to reach the average level of competence at a given level. For example,

behavioral competencies that are ranked towards the bottom at one level but towards the top at the next indicate a potential area that managers should focus on in development in order to be prepared for the next level along the organizational hierarchy. Similarly, examining the largest changes in experiences or competencies between levels gives insight into the competencies or experiences that may require a greater amount of development or training to reach an average level of competence at the next level. These insights provide a general roadmap for leader and management training and development.

**Personality**

Personality was an important variable to assess in examining differences across management levels – it has been shown to predict job performance and is often tested and used in personnel selection and development settings. As the results showed, scores across the personality factors increased moving up the organizational hierarchy with higher levels displaying more of the positive sides of the factors. This supports prior research done by Guilford (1952), Kuncel (1997), and Ones and Dilchert (2007). Though many of personality's relationships with performance may in part be due to contamination in the criteria, examination of the results and the cited leadership/management literature shows a substantial amount of congruence.

The Openness factor of Intellect, which shows the largest increase in its mean from the middle to top levels, largely deals with being open to new ideas, understanding large amounts or ambiguous information, being creative, and to be able to visualize future outcomes. These traits become more important moving up the organizational

hierarchy as managers expand the scope of their responsibilities and need to account for more variables (Allan, 1981; Brousseau et al, 2006; Hedlund et al, 1999; Mumford et al, 2000; Tornow & Pinto, 1976). This corresponds to the expanding complexity of managerial roles the higher in the organization one is (Jacobs & Jaques, 1987; Streufert & Swezey, 1986) as well as the increase in more conceptual skills when moving into executive levels of management (De Meuse et al, 2011; Mumford et al, 2007). It was the only personality factor to consistently correlate with Overall Management across levels as well as adding incremental variance beyond cognitive ability. This is likely due to the similarity in the constructs where Intellect is largely the ability to work with information and generate ideas and the management performance factor is the ratings of a person's effectiveness at problem solving, planning, organizing, and working with large amounts or ambiguous information. The finding that Intellect increases moving up the organizational hierarchy also supports McCauley et al's (1998) proposition that one of the main capacities to develop through experience is the ability to think creatively.

Assertiveness, being confident, proactive, influential, and taking on leader-type roles, is very similar to the traditional personality traits of Dominance and Masculinity. As Anderson and Kilduff (2005) showed, Dominance is largely related to leader emergence and perceived competence and Guilford (1952) and Kuncel (1997) found that people at higher levels of management had, on average, higher scores on Masculinity or Dominance respectively. In accordance with these findings, it would be expected that the average level of Assertiveness across managers increases moving up the hierarchy. This is likely due to a selection effect as it is more related to leader emergence than leader

effectiveness – the assertive individuals request and seek out higher positions (Anderson & Kilduff, 2005). This is also shown in that Assertiveness's largest correlations were more with the Motivation and Self-Management Performance factors than either Overall Management or Leadership. This makes intuitive sense as the personality factor deals more with reaching higher levels – initiative and taking charge – than performance at those levels. This also explains its relationship to Annual Salary at the bottom and top levels: those high on Assertiveness are going to ask for or demand higher salaries as well as being proactive in taking on roles with more pay. Clearly it is an important personality trait in reaching higher management levels and from an experience standpoint, coincides with McCauley et al's (1998) proposition that leaders should develop their self-confidence throughout their career which when expressed, typically leads to more assertive behavior.

Enthusiasm, being sociable, high energy, excitement-seeking, and optimistic, becomes increasingly important to performance moving up the hierarchy as found by the correlation and regression analyses, explaining more of the variance in Overall Performance and Overall Leadership than most of the other personality variables as well as more variance at higher levels, even when controlling for cognitive ability. In his extensive longitudinal analyses of several organizations, Collins (2001) found that one of the distinguishing characteristics of highly successful executives was an extreme persistence in the face of obstacles and adversity which in part is characterized by an extremely high energy level. This also corresponds to more transformational type leadership behaviors, which increase moving up the hierarchy (Oshagbemi & Gill, 2004),

where high energy, sociability, and optimism are typically attributed to more charismatic individuals and can be used to inspire and motivate subordinates.

The Agreeableness scales of Compassion, understanding, caring, and respecting others, and Teamwork, working well with others, match theory and research as well. The increase in mean scores, correlations, and explained variance in performance criteria beyond cognitive ability at the middle and top levels corresponding to the research showing that middle and top management deal more with coordinating with others, communicating, and empowering others to do work (Hedlund et al, 1999; Kraut et al, 1989; Tornow & Pinto, 1976). Correlation analyses also show that Compassion is more highly related to Overall Performance and Overall Leadership at higher levels. The relationships to performance support Guilford's (1952) study that found cooperativeness related to ratings of performance at both the supervisor and executive level. These are necessary traits moving up the organizational hierarchy as managers delegate more and more work to subordinates and empower them to make critical decisions or rely on them for advice and assistance in strategy development and implementation (Kaiser & Craig, 2011). That the agreeableness scales increase across levels also supports McCauley et al's (1998) work on experiences that an important capacity to acquire and develop is the ability to work effectively in social systems, i.e. work well with and show understanding and respect towards others.

The Neuroticism scales of Volatility, remaining calm in stressful situations, and Withdrawal, a general satisfaction with one's life, self-awareness, and trusting others, related most highly to Self-Management Performance. This makes intuitive sense as the

factors relate to internal control and awareness of emotions. This supports McCauley et al's (1998) suggestion that developing self-awareness as a leader is critical to success. It is important to remember that Withdrawal is reverse scored in order to have higher scores represent more positive behaviors and characteristics. High scores on Volatility also represent more positive behaviors. Interestingly, Withdrawal correlates with Overall Leadership at the bottom level but Overall Management at the top level. This could be due to different facets of the Withdrawal factor correlating with performance measures at different levels. Examining the work by Guilford (1952), it was found that supervisor's performance was related to scores on "emotional stability" and "freedom from nervousness" while performance was associated with "freedom from inferiority feelings" at the executive level. All three traits could be considered facets of the Withdrawal factor. More specifically, the correlation with leadership performance at the bottom level may be due to the nature of transitioning into one's first leadership/management role where the trials of establishing authority over others and garnering the respect of those who used to be peers requires trusting them to do their job (not micro-managing), understanding one's own strengths and weaknesses, and not being afraid to take charge. It correlates with leadership instead of management possibly because of the frequent direct contact typical of supervisor type roles. At the top level where it correlates with Overall Management as well as explaining variance beyond cognitive ability, it may be the same issues of delegation and trust but it relates more with management because at the top level, delegation deals more with handing off entire strategies, objectives, and projects and trusting middle management to implement and achieve them than the direct

oversight at lower levels of management. It may also become more and more important at higher levels for managers and leaders to be more self-aware and able to recognize "blind spots" or areas where they do not excel so that they can better delegate that work to others who will do a better job (McCauley et al, 1998).

The Conscientiousness factors of Industriousness, ambitious, achievement-oriented, and self-disciplined, and Orderliness, dependable and detail-oriented, relate highly to the Motivation Performance factor across levels as well as Overall Management at the top level. This follows the general job performance literature that initiative, persistence, and effort are primary determinants of effective performance (Campbell, 2012b). The correlation and predictive value of the facets at the top level with Overall Management indicates an increased need for high degrees of Conscientiousness to succeed at higher management levels. This also corresponds to research that the demands of the top level increase, requiring greater efforts from higher level managers to the point of needing the assistance of others in order to accomplish the desired objectives (Brousseau et al, 2006; Kaiser & Craig, 2011).

The Derailing Leadership personality factors follows the review by Hogan et al (2010) that it is an important aspect of failed leadership or management – leaders often fail not because of what they don't have, but because of what they *do* have. Derailing Leadership is made up of behaviors related to being self-centered, manipulating, intimidating, and passive-aggressive and because the scale has been reverse scored for this study, the higher the score, the less derailing behaviors are expressed. That higher levels averaged higher scores (displayed less of these traits) is expected as those that do

exhibit such characteristics typically fail to be promoted. It also follows that the leaders or managers with higher scores on this factor (show less derailing behavior) will perform at a higher level, displayed by the significant correlations and incremental variance added beyond cognitive ability with Overall Leadership and Overall Performance at the middle and top levels.

Looking at personality as a whole, it was found that the mean increases across the factors when moving up the hierarchy also corresponded to predicting more of the variance in the performance factors, specifically Overall Performance, Overall Leadership, and Overall Management, beyond cognitive ability. This indicates that as one moves up the organizational hierarchy, personality becomes a more important factor for effective performance and by extension, success in the role. It therefore becomes more important for selection decisions and development initiatives. It also shows differential relationships with Overall Leadership versus Overall Management Performance indicating the personality facets that should be evaluated for development initiatives may depend not only on level, but what aspects of performance the organization wants to improve, i.e. leadership versus management.

**Cognitive Ability**

In general, cognitive ability is the single best predictor of performance (Schmidt & Hunter, 1998) and research by Ones and Dilchert (2009) suggests it increases moving up the hierarchy. However, results from this study fail to support their findings. Analyses of the means across three separate measures of cognitive ability show that it

remains relatively stable. The failure to find differences between levels of management could be due to that in general, more intelligent people are selected into management roles compared to non-management and that there is less variability among managers across levels compared to the general population (Ones & Dilchert, 2009). If this is the case, and managers are higher in cognitive ability than the general population and have similar variability in their scores across management levels, the findings from this study suggest during selection processes managers are not distinguished as much on cognitive ability and other factors play a larger role in determining promotions. Research by Kraut (1969) comparing scores on two intelligence tests for management versus executive school attendees found that though means were statistically significant and higher for the executive school, they were practically insignificant and did not predict career advancement after the training program. These results support this study's results – there may be slight differences on cognitive ability between levels but their significance is minimal and once in management, cognitive ability has a smaller effect on further career advancement than other variables.

In the analyses examining cognitive ability's relationship to performance, it correlates strongly across several of the criteria and changes in the number and degree of strength of significant correlations across levels. Moving up the organizational hierarchy, cognitive ability appears to decrease in its prediction of performance while also being more highly related to Overall Management Performance than Overall Leadership. This is shown in the regression analyses where the Watson-Glaser accounted for a larger amount of variance in Overall Management Performance than Overall Leadership at each

level but also accounted for less variance each successive level moving up the organizational hierarchy. It is therefore important to consider cognitive ability in selection and development as it continues to predict performance across levels; however, other variables should be considered and may increase in their relative value in predicting performance. Cognitive ability's decrease in its prediction of performance could potentially be due to what appears to be selection processes focused on alternative measures, indicated by the lack of mean differences despite strong relationships to performance. If this is the case, the lack of use of cognitive ability measures in promotion decisions could be due to legal issues around the adverse impact often found in cognitive ability tests.

**Experiences**

With much of what managers learn about work and how to work, manage, and lead coming from experience (McCall, 2010), it is an important variable to understand when comparing levels. As would be expected, the amount of any given experience increases moving up the organizational hierarchy. It is interesting that aside from Annual Salary, experiences are largely related to performance only at the middle level. Closer examination of the experiences correlating with performance indicates those most related to performance deal with interpersonal issues: Interpersonally Challenging Situations, Difficult Staffing Situations, and Development of Others. This coincides with theory and previous research that middle management deals extensively with communicating, coordinating, and training others (Hedlund et al, 1999; Huy, 2001; Kraut et al, 1989;

Tornow & Pinto, 1976) as well as McCauley et al's (1998) work suggesting working effectively with others is an important ability to develop through experience. Other experiences deal with Strategy Development, Financial Management, and Inherited Problems & Challenges which also coincides with previous research indicating that middle managers expand on and define strategies set by upper management, handle and manage resources and their allocation to achieve objectives, and deal with the problems of coordinating multiple units into the achievement of larger goals (Kraut et al, 1989; Pavett & Lau, 1983; Tornow & Pinto, 1976).

Analysis of the rank order of the amount of change for experiences between levels reveals more about what experiences may be important in preparing for the next level. Comparing the two transitions, bottom-middle and middle-top, on how much mean scores change gives an indication on what the average manager experiences to reach the next level. The experiences showing the greatest difference for a transition indicate on average, more experience in the category may be necessary to succeed at the next level relative to the other experience categories. The most change during the transition from bottom to middle management occurs for the Overcoming Challenge & Adversity and Risky and/or Critical categories. This follows research that finds one of the components for leadership development via experience is that it should be challenging (DeRue & Wellman, 2009; McCall et al, 1988; McCauley, 2002). That they occur to the greatest extent between bottom and middle management indicates the difficulty of moving up the organizational hierarchy, supporting Freedman's (1998) assertion that managers often struggle when moving into higher roles. From the middle to top levels, experiences are

centered around strategy, increased visibility and networking, and highly critical or risky situations. This follows research showing that leaders and managers become more visible and are required to network and interface with the public more (Hedlund et al, 1999; Martineau et al, 2005; Pavett & Lau, 1983; Tornow & Pinto, 1976). As middle managers become more involved in strategy development and implementation, they also begin making bigger and more critical decisions (Brousseau et al, 2006; Kraut et al, 1989). Ensuring managers and leaders go through some of these experiences as they move up the hierarchy may better prepare them for future roles and help them to be successful. It is important to remember, however, that although experiences should be challenging, they have the highest impact in terms of learning and value gained when coupled with feedback and some type of support (DeRue & Wellman, 2009; McCall, 2010).

**Behavioral Competencies**

In this study, the "behavioral competencies" are factors from 360-degree feedback. Two sets of factors were analyzed: one, the original factors from PDI9th House's PROFILOR and the second, the Campbell (2012a; 2012b) leadership and management factors. Analysis of the means show nearly every factor from both sets of behavioral competencies increases across levels with the largest differences between the bottom and middle levels. Though the mean profiles were more similar for adjacent levels, the profiles for the predictor-performance correlations varied in which two levels were most similar. That adjacent levels were not always more similar in their

relationships to performance than non-adjacent levels suggests some variables' relationships to performance may change by level. Correlational and regression analyses also showed varying relationships with the performance factors across levels. Specifically with the Campbell factors in the correlational analyses, the behavioral competencies had higher correlations at the bottom level and related more to Overall Leadership Performance than the other performance factors. The management factors related more the Overall Management Performance than the leadership factors but unexpectedly, related more to Overall Leadership than Overall Management Performance. Interestingly, the behavioral competencies showed the strongest relationships with Annual Salary at the middle level, with the management factors having stronger correlations than the leadership factors. This could be due to the management factors having a more direct impact on achieving organizational objectives and impacting the bottom line and are therefore have a greater influence in determining specific salaries.

Beyond the behavioral competencies' relationships with performance, it is important to examine differences in rank order of raw score means across levels where the bottom ranked factors could be considered development needs for that level. However, as can be seen in Tables 20 and 21, the average manager was rated "competent" across all behavioral competencies and this limits the evidence that the bottom ranked factors might be considered development needs. Another way to compare rank orders is how they change across levels – whether factors move up or down relative to their prior position. In essence, if a factor increases in its rank order between levels, i.e. average manager competence is rated higher relative to the other factors at the next

level, it could be considered a development need at the lower level that by improving, the individual will be better prepared for the next level. Also, if a factor decreases in its rank order between levels, i.e. average manager competence is rated lower relative to the other factors, it does not mean managers are *less* competent (the mean competence still increases), but rather it may mean the factor requires less competence *relative* to the other factors above it. Research by De Meuse et al (2011) and Mumford et al (2007) show and discuss that regarding skills, it is not that managers become less skilled or certain skills lose importance, but rather certain skills tend to increase more than others in competence between levels, changing their mean rank order. Ratings of the *relative* importance of certain skills also change between levels. As they mention, this may in part be due to not having the time to devote to skills that do not require as much competence as others or other "less" important skills. In this study, though the ranks orders of the raw score means show very little change in their rank order, the rank orders of the amount of change between levels scores indicate there may be different development needs when determining where to focus development initiatives.

As discussed in the results, there were only slight changes in the rank order of raw score means for both the PROFILOR and Campbell behavioral competencies and though they are minor, the changes coincided with the research literature on level differences. Specifically among the Campbell factors, Decision Making increases its rank order ($5^{th}$ to $4^{th}$) from the middle to the top level while Goal Emphasis does the same from the bottom to the middle level ($7^{th}$ to $6^{th}$). This coincides with the research literature that executives and top level managers are the big decision makers (Brousseau et al, 2006) and that

explaining goals and garnering employee commitment is an important part of middle management (Kraut et al, 1989; Oshagbemi & Gill, 2004; Tornow & Pinto, 1976). One other change occurred where Monitoring Unit Effectiveness increased in its rank order from the bottom to the middle level ($15^{th}$ to $13^{th}$) following research that middle management monitors the performance of a wide variety of units (Kraut et al, 1989; Tornow & Pinto, 1976). Communication ($4^{th}$ to $5^{th}$), Consideration ($6^{th}$ to $7^{th}$), and Coordination ($13^{th}$ to $15^{th}$) were the factors that decreased in rank order. Overall however, the rank orders experienced minor change, indicating that the behaviors and actions rated as competent at one level remain at the same level of competence relative to the other factors at the next level and the minor changes that did occur could be due to random error.

Larger changes are seen in the rank orders when comparing the amount of change in raw score means between the two primary transitions: bottom to middle versus middle to top levels. Examining the rank order of the amount of change gives insights into where training may be useful in preparing for the next level – that despite the overall mean rank order not changing, there may be certain competencies that require greater amounts of change to be competent at a higher level, and therefore may require more training and development. With the PROFILOR behavioral competencies, Leadership and Management showed the greatest change at the bottom to middle transition indicating that for the average manager, there may be more learning or development required for leadership and management skills to reach an average level of competence at the middle level compared to the other factors. Looking at the transition from middle to top

management, Organizational Knowledge becomes the factor with the greatest change suggesting the average middle manager needs to increase their competence around business and industry knowledge more so than the other factors in order to reach the average level of competence for top-level managers. This does not mean training or development in other areas should be ignored, just that the factors with the greatest change may require the most training or development in order to reach an average level of competence at the next level.

Across the Campbell behavioral competencies, there are several differences in the rank order of amount of change when comparing the bottom-middle and middle-top transitions. The factors experiencing the most change at the bottom to middle level transition center around goal setting and ensuring their accomplishment; training and developing others; and making decisions. This follows research that middle managers ensure the achievement of strategies (e.g. Kraut et al, 1989), spend time training and developing subordinates (e.g. Hedlund et al, 1999), and have to make decisions about allocation resources (e.g. Tornow & Pinto, 1976). From middle to top management, Emphasizing Goals, Decision Making, Initiative & Effort, and External Representation show the greatest amount of change. This supports research findings that top level managers build commitment to goals (Oshagbemi & Gill, 2004), make critical decisions (Brousseau et al, 2006), require higher levels of persistence and effort (Collins, 2001), and represent the organization to the public and stakeholders (Martineau et al, 2005). Interestingly, Technical Performance is another factor showing greater change than others. This is perhaps due to a need for top management to understand the various

products or services offered by the organization and competitors. It also appears to support research by Gomez-Mejia et al (1985) who found executives were highest on applying technical expertise or highly advanced techniques and methods to special problems, issues, and questions. Again, greater amounts of change does not mean that a factor is more important than the others, but may indicate that greater learning and development is required along these transitions in order to reach an average level of competence at the next level. Though these are based on averages and any particular individual will have their own development needs, they offer a general roadmap on what are typical areas where managers moving up the hierarchy may require development.

The rank orders of amount of change also generally support Freedman's (1998; 2005; 2011) model of *Let Go*, *Preserve*, *Add On*. The fact that there are several shifts in the amount of change between levels indicates there are different needs and certain behaviors potentially needing more development relative to others in order to succeed moving up the hierarchy. To be prepared at the next level, managers must identify the behaviors most in need of development. As Freedman discusses, this can be extremely difficult to not only determine but to actually do and change – people often struggle with changing old habits. These results offer guidance on the areas that change most and where managers may need the most support to adequately develop the necessary competence (DeRue & Williams, 2009; Freedman, 1998). Understanding these changes can further help development initiatives by identifying the areas on which to focus to better prepare individuals for higher level roles.

**Personality vs. Behavioral Competencies**

An interesting finding was found when comparing the significant mean differences for the personality factors and the behavioral competencies: while personality was more different when comparing the middle and top levels, the behavioral competencies showed the larger differences between the bottom and middle levels. These results indicate the top level may be the most unique in terms of personality but are quite similar to middle managers in terms of their rated competence while bottom and middle managers are more similar in their personalities but middle managers are rated as more competent. In regards to selection and development, a few potential implications come to mind. One, because middle managers and executives are more similar in competence, selection of top level leaders becomes more important and personality's value in selection processes increases resulting in the large difference in personality between middle and top levels. Another implication is that development is extremely important for the transition from bottom into middle management where personalities are more similar yet competence has a significant increase: a greater degree of change is required when transitioning into middle versus top management. A third potential implication is because the top level showed smaller differences in rated competence of the behavioral competencies, development may become a more important issue where a greater degree is required to increase competence even a little. These implications are speculative, and these results may be due to sampling error, but the results showing personality differs greatest between middle and top management while competence in

behavioral competencies differs greatest between bottom and middle management is very interesting and could impact selection and development initiatives.

**Management vs. Leadership**

At the beginning of this paper management and leadership were defined as distinct processes: Management as the activities that best use resources to achieve goals; and Leadership as the interpersonal influence process to direct a group towards a goal. Though confirmatory factor analyses were unsuccessful testing the model fit of the factors proposed by Campbell (2012a), the analyses of these factors showed substantial reliabilities and relationships with performance across levels as well as differences in means, rank orders, and correlations between levels. Interesting as well was how many of the variables differed in their prediction of Overall Management versus Overall Leadership Performance. Based on the correlations, personality appears to more highly relate to leadership performance while cognitive ability relates more to management performance. This coincides with their definitions of interpersonal influence versus utilization of resources: personality relates more to interacting with others and cognitive ability relates to problem solving and understanding multiple variables and relationships. The personality factor Intellect, which is a person's ability to handle ambiguous information, form new ideas, and analyze abstract concepts, is the most similar to cognitive ability and also relates highly to management performance. If personality is more related to leadership and cognitive ability to management, this has important implications for training and development. Namely, it would appear that leadership

development initiatives should focus more on experiences and behavioral development while management development initiatives should focus more on learning management concepts and "best practices". Some evidence is found for this in that experiences, largely around interpersonal issues, are significantly correlated to Overall Leadership Performance at the middle level of management. Regression analyses using personality and cognitive ability to predict performance reveal that personality's relationship to either Overall Leadership or Management Performance varies depending on the facet and level. This research offers evidence that leadership and management may be distinct processes with different predictors of effectiveness but further research needs to be done.

## Limitations

There are several potential limitations to note regarding this study. First, in regards to cognitive ability, there may be a ceiling effect where managers "maxed out" the score of the tests, receiving the highest score possible, reducing the variability in scores. Post-hoc analyses of raw score means, standard deviations, frequencies, and skewness show that distributions were negatively skewed despite nearly equivalent means and standard deviations across levels and measures. Scores also did not become overly maxed out at higher levels, i.e. higher frequencies at the highest possible scores. Further examination revealed the negative skewness of the distributions increased from the bottom to top levels, with the average across the measures for the bottom level equaling -.572 and at the top level, -.762, with a minimum of -.166 at the bottom for the EAS Spatial measure and maximum of -1.094 for EAS Total at the top. This is

considered a moderate level of negative skewness as described by Bulmer (1979) and indicates the amount of higher scores increases at the top level despite similar means and no "maxing out" of scores. Overall, this suggests that although means and standard deviations are similar across levels, that there are a greater number of higher scorers moving up the organizational hierarchy and that the elimination of a few low outliers may result in higher means and lower standard deviations for the higher levels. If this is the case, then there would appear to be a moderate ceiling effect limiting the variance at higher levels and subsequently, its ability to predict performance.

Another limitation is the contamination of Assessment Center ratings. As part of the computation of the overall performance scores, certain dimensions within factors included scores from certain personality facets and/or cognitive ability measures. These scores were combined with ratings of various exercises and tasks into dimension scores which were subsequently averaged into the seven performance factor scores used in this study. Many raters were also given 360-degree feedback information on the participants and though it was not included in ratings of effectiveness, having the 360-degree information could influence ratings of their effectiveness. Because personality and cognitive ability scores were used in the Assessment Center ratings, correlations between the two predictor domains and the performance criteria are likely stronger than would otherwise be found. Despite this contamination, the influence or inclusion of such ratings into overall competency ratings is potentially minor as they are only one out of several components used to judge effectiveness for each performance factor. Though correlations would likely decrease in strength if the contamination was eliminated, it is

not believed that they would disappear altogether as these results also support prior research findings that personality predicts leadership effectiveness (Judge et al, 2002) and that relationships to performance change depending on level (Guilford, 1952; Kaiser & Craig, 2011).

To further examine the contamination of the performance criteria, post-hoc analyses were conducted correlating personality and cognitive ability with the Campbell behavioral competencies and the PROFILOR Overall Performance rating (Appendix tables G-I). Results were very similar. Personality related more strongly with the Campbell leadership factors while cognitive ability related more strongly with the management factors across levels. However, unlike the assessment center performance factors, personality did not increase in its ability to predict the behavioral competencies moving up the organizational hierarchy. In regards to cognitive ability, it did not increase or decrease in its ability to predict the behavioral competencies moving up the hierarchy but the cognitive ability measures that did correlate changed across levels. Further research needs to be conducted using a wider range performance criteria as well as criteria that do not include ratings or scores from the predictors.

Third, several variables were examined in the above analyses and although only a select few were chosen for the moderator analyses via hierarchical regression, some differences may be the result of random error. Many of the changes in correlations could be due to sampling error – only a subset of the managers from the total dataset had both predictor and performance data. However, many of these results correspond to what has been found in other studies on differentiating the levels of leadership/management. In

addition in the moderator analyses, random error was partially mitigated by limiting the variables chosen but could still occur. It was also mitigated by the choice of variables based on definitions and not any prior analyses. Because only a select number of variables were used in the moderated regression analyses, the results showing no moderation effect are not necessarily true for all variables and some of those not selected may be moderated by level. Further research needs to be done exploring more completely whether level moderates any relationships to performance.

A fourth consideration is that though leadership and management were treated as distinct factors in the Campbell behavioral competencies and for the Assessment Center scores, the instruments themselves were not necessarily designed this way. The assessments used were derived based on specific competency models developed by PDI and as discussed above, there are certain limitations and considerations when examining data from competency models (Campion et al, 2011). Had the instruments been designed around the factors Campbell (2012a; 2012b) synthesized from an extensive analysis of the performance literature, results from this study may have been different. Some support for the distinctness of leadership versus management was found: different variables correlated more highly with one or the other performance factor as well as differences in how and which leadership and management behavioral competencies correlated with the performance criteria.

A fifth issue is that this study examined differences between levels and though there is strong support for these differences, there may also be industry or function differences. Examining industry and function differences goes beyond the scope of this

study but that there are differences across industries and functions has received support in the research literature (Gomez-Mejia et al, 1985). Analyses of the nature of the data reveal that it spans over 24 different functions and 28 industries. Though three to four functions or industries account for approximately half the data, no one function or industry accounted for more than a fifth of the data and there appears to be enough variation to mitigate any one function or industry dominating the sample.

Another issue to consider is that the variables assessed were ordinal and not interval. Though this is often not addressed in psychological studies, it is an important point to note. What this means is that the difference between scores is more difficult to interpret because a difference between a mean of 0 and .3 is not necessarily the same as the difference between -.3 and 0 or even .3 and .6. There has yet been no definitive solution to this problem in psychology but it is worth considering when examining the results and comparing the variables across levels or against each other.

Finally, although inferences may be drawn about the changes an individual goes through moving up the organizational hierarchy, this was a cross-sectional study and some caution should be used when making such inferences. The results display differences between levels but no conclusions can be drawn on whether individuals themselves develop the characteristics displayed at each level or whether the differences are the results of selecting individuals with those traits. This is extremely important when considering selection and development for leaders and managers. In regards to personality, the general consensus has been that it remains stable in adulthood (Costa & McCrae, 1997). However, recent meta-analytic research shows that personality

continues to develop and change throughout adulthood (Roberts, Walton, & Viechtbauer, 2006). Many of the studies included in this meta-analysis found role experiences such as work were associated with changes in personality. This could mean that changes in personality at different leadership levels are the result of managers and leaders adapting or changing to meet the requirements of the role. Development then becomes an increasingly important aspect for leaders and managers moving up the organizational hierarchy. However, if personality remains relatively stable, selection becomes more important. Additional longitudinal studies are needed to better understand the nature of change in personality, especially in regards to how it may change for individuals across time as they move into new roles and positions in organizations.

## Summary and Conclusions

Overall, the results of this study show substantial differences between management levels across personality, experiences, and behavioral competencies. Personality scores increase moving up the organizational hierarchy and are more predictive of leadership performance than management performance. Personality also predicted performance when controlling for cognitive ability and accounted for more of the variance in performance at higher levels. Though every factor did increase in mean scores, replicating past research (Guilford, 1952; Kuncel, 1997; Ones & Dilchert, 2009), the 10-factor solution expands our understanding of how personality may change across hierarchical levels of the organization by offering more detail on the behaviors that change. Interestingly, the largest change occurred between middle and top management

indicating executives and directors may be the most unique in terms of personality. Further research should be conducted comparing the mean personalities of the three levels, how personality may predict additional measures of performance at each level, and whether the facets that predict performance change by level. Longitudinal studies are also necessary to determine whether personality differences are due to selection processes or whether people adapt their personalities to fit the leadership or management role they find themselves in.

Though there were no differences in cognitive ability, and its prediction of performance appears to decrease moving up the hierarchy, at every level it did show strong correlations with performance. As discussed, the lack of differences between hierarchical levels could be due to organizations avoiding the use of cognitive ability measures in selection for adverse impact and legal reasons while the decrease in the strength of its prediction of performance may be partially due to a small ceiling effect. Cognitive ability's importance in determining and predicting performance has been demonstrated in prior research (Schmidt & Hunter, 1998) and the findings presented here show it continues to be an important determinant of performance across management levels. Though other variables may become more important for distinguishing between effective leaders and managers the higher up the hierarchy, cognitive ability should not be overlooked and further research should be conducted examining how it may change across management levels.

Interestingly, personality and cognitive ability appear to predict leadership performance and management performance differently. Specifically, the personality

factors that correlated differed depending on which performance factor is examined: leadership or management. Personality also relates more to leadership performance than management performance while cognitive ability relates much more highly to management performance than leadership performance. This makes intuitive sense when considering the definitions of each: leadership is a process of interpersonal influence while management is the process of managing and allocating resources. Interpersonal influence requires skills and behaviors dealing with interacting with others, a large piece of personality; managing and allocating resources requires the ability to handle large amounts of complex information, the domain of cognitive ability.

Experiences clearly increase moving up the organizational hierarchy though how these increases may relate to performance remains unclear. It appears experiences are mostly related to salary across levels and to measures of performance at the middle level of management. Most interesting is that the rank orders of the amount of change for experiences differ between the two transitions examined: bottom to middle and middle to top management. This suggests it may be beneficial to experience more of certain types of situations when preparing for the next level. This gives direction to development initiatives and what types of assignments organizations should potentially assign to whom they view as future leaders.

Behavioral competencies, which in this study were ratings of competence from others in 360-degree feedback, increase in their mean scores moving up the hierarchy and differ in their rank orders of the amount of change that occurs during the two primary transitions (bottom-middle, middle-top). That the rank orders of the amount of change in

competence vary comparing the two transitions indicates certain factors may require a greater amount of training and development in order to achieve the average level of competence at the next level. This gives a general roadmap of what types of behaviors and competencies leadership development programs could focus on to help managers effectively transition into higher-level roles, a process that often causes manager derailment (Hogan et al, 2010; McCall & Lombardo, 1983). The behavioral competencies were the only variable to show any sign of being moderated by level as well. Though it was for only a single factor, further research and refinement of the factors analyzed may reveal that level has a stronger moderating effect than found in this study.

In testing whether level has a moderating effect between the predictor variables and performance, it is clear that both level and various predictors relate to performance. However, there appears to be no interaction between level and the tested variables indicating level did not have a moderating effect. This does not mean it never does and other variables not chosen here may be moderated by level. Further research needs to be conducted to determine whether level moderates relationships to performance.

Differences between levels of management clearly have an impact on managerial transitions and further research should be conducted to enhance our understanding of these differences so we can better prepare people for the new roles and positions moving up the organizational hierarchy. These results shed light on how levels differ in terms of personality, cognitive ability (lack of difference), experiences, and behavioral competencies and offer an initial and general roadmap of the characteristics, behaviors,

and experiences leaders and managers may need to develop in their careers when moving up the hierarchy. The better prepared an organization can make their leaders and managers for each subsequent role, the faster those people are able to transition, be successful, and provide greater value to the organization.

## Tables

**Table 1. Campbell's (2012) Leadership, Management, and General Job Performance Dimensions**

| **Leadership Performance Dimensions:** |
|---|
| 1. *Consideration, Support, Person-Centered*: Providing recognition and encouragement, being supportive when under stress, giving constructive feedback, helping others with difficult tasks, building networks with and among others. |
| Number of items: 16 |
| 2. *Initiating Structure, Guiding, Directing*: Providing task assignments, explaining work methods, clarifying work roles, providing tools, critical knowledge, and technical support. |
| Number of items: 5 |
| 3. *Goal Emphasis:* Encouraging enthusiasm and commitment for the group/organization goals, emphasizing the important missions to be accomplished. |
| Number of items: 6 |
| 4. *Empowerment, Facilitation*: Delegating authority and responsibilities to others, encouraging participation, allowing discretion in decision making. |
| Number of items: 13 |
| 5. *Training, Coaching*: One-on-one coaching and instruction regarding how to accomplish job tasks, how to interact with other people, and how to deal with obstacles and constraints. |
| Number of items: 8 |
| *6. Serving as a Model:* Models appropriate behavior regarding interacting with others, acting unselfishly, working under adverse conditions, reacting to crisis or stress, working to achieve goals, showing confidence and enthusiasm, and exhibiting principled and ethical behavior. |
| Number of items: 21 |
| **Management Performance Dimensions:** |
| 1. *Decision Making, Problem Solving, and Strategic Innovation*: Making sound and timely decisions about major goals and strategies. Includes gathering information from both inside and outside the organization, staying connected to important information sources, forecasting future trends and formulating strategic and innovative goals to take advantage of them. |
| Number of items: 15 |
| 2. *Goal Setting, Planning, Organizing, and Budgeting*: Formulating operative goals; determining how to use personnel and resources (financial, technical, logistical) to accomplish goals; anticipating potential problems; estimating costs. |
| Number of items: 7 |
| 3. *Coordination*: Actively coordinating the work of two or more units, or the work of several work groups within a unit. Scheduling operations. Includes |

negotiating and cooperating with other units.

Number of items: 10

4. *Monitoring Unit Effectiveness*: Evaluating progress and effectiveness of units against goals: monitoring costs and resource consumption.

Number of items: 2

5. *External Representation*: Representing the organization to those not in the organization (e.g., customers, clients, government agencies, nongovernment organizations, the "public"); maintaining a positive organizational image: serving the community; answering questions and complaints from outside the organization.

Number of items: 4

6. *Staffing*: Procuring and providing for the development of human resources. Not one-on-one coaching, training, or guidance; but providing the human resources the organization or unit needs.

7. *Administration*: Performing day-to-day administrative tasks, keeping accurate records, documenting actions. Analyzing routine information, and making information available in a timely manner.

Number of items: 3

8. *Commitment and Compliance*: Compliance with the policies, procedures, rules, and regulations of the organization. Full commitment to orders and directives, together with loyal constructive criticism of organizational policies and actions.

Number of items: 4

**General Job Performance Dimensions:**

1. *Technical Performance*: The degree to which the individual performs the core substantive technical tasks that are central to his or her job. They are the job-specific performance behaviors that distinguish the substantive content of one job from another. Constructing custom kitchens, doing word processing, designing computer architecture, driving a bus through Chicago traffic, and directing air traffic are examples.

Number of items: 2

2. *Communication*: The proficiency with which one conveys information that is clear, understandable, and well organized. The two major subfactors are oral and written communication.

Number of items: 6

3. *Initiative, Persistence, and Effort*: The consistency of an individual's effort day to day, the frequency with which people will expend extra time when required, and the willingness to keep working under adverse conditions. It is a reflection of the degree to which individuals commit themselves to all job tasks, work at a high level of intensity, and keep working when it is cold, wet, or late.

Number of items: 7

4. *Counterproductive Work Behavior*: Actions that are intentional, that violate or

| |
|---|
| deviate from prescribed norms, and which have a negative effect on the individual's contribution to the goals of the unit or organization. |

**Table 2. Summary of the Nature of Work at Three Organizational Levels (Kaiser et al, 2011)**

| Level | Time Span | Responsibilities | Performance Requirements | Primary Skills |
|---|---|---|---|---|
| Top (executive) | Long (5 to 20+ years) | Performance of a corporation or group of businesses | Creation of structure: link organization to external environment, develop consensus about the future, set policy and strategic direction, shape organizational culture, to support strategy, secure capital resources | Conceptual |
| Middle (middle management) | Medium (2 to 10 years) | Performance of multiple functional unites or a division | Interpretation of structure: translate strategy and policy into operating plans, coordinate diverse functional units, allocate resources across functions, serve as communication nexus throughout the organization, help employees cope with change | Interpersonal |
| Bottom (supervisory) | Short (1 day to 2 years) | Performance of a small group or team within a single division | Application of structure: assign tasks, execute operating plans, supervise and direct the day-to-day work, anticipate and solve production problems, distribute resources to individuals and teams | Technical |

**Table 3. GPI Facets sorted into the 10 Factor Model of Personality (DeYoung et al, 2007) with the Derailing Factor as the 10th**

| | |
|---|---|
| **Openness** | |
| **Intellect** | |
| Thought Agility (.73)<br>Items = 9 | This is a measure of the tendency to be open both to multiple ideas and to using alternative modes of thinking. It is a measure of divergent thinking that is focused on the input and processing of information. This is a trait characterized by: thought flexibility; the ability to think things through by looking at many perspectives; the desire to draw out ideas from others; and a willingness to consider other's ideas along with one's own. |
| Thought Focus (.70)<br>Items = 7 | This is a measure of the tendency to understand ambiguous information by analyzing and detecting the systematic themes in the data. It is a measure of convergent thinking that is focused on the input and processing of information. This is a trait characterized by: analytical and logical thinking ability; the ability to find patterns in data that may seem initially unsystematic or ambiguous; a desire to focus on finding a single best answer rather than proposing multiple possibilities; a preference for objective rather than subjective input; and a desire to use a systematic approach to guide thinking. |
| Vision (.78)<br>Items = 9 | This is a measure of the tendency to have foresight in one's thinking. This trait is characterized by: the ability to visualize outcomes, the tendency to think in a holistic manner; taking into account all variables that will effect future events; the tendency to take a long range perspective in one's thinking; and the ability to anticipate future needs, problems, obstacles, eventualities, and outcomes. |
| Innovation/Creativity (.86)<br>Items = 8 | This is a measure of the tendency to produce unique and original things. It is a measure of divergent thinking that is focused on the generation and output of unique ideas and |

| | |
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| | expressions of ideas. This trait is characterized by: being inventive; being imaginative; being expressive of ideas and feelings through original and unique output. |
| **Extraversion** | |
| **Assertiveness** | |
| Taking Charge (.81)<br>Items = 10 | This is a measure of the tendency to take a leadership role. This trait is characterized by: a desire to direct the activities of others; an ability to mobilize others to take action; a desire to take a leadership role; a desire to step forward when there is no clear leader; and a willingness to take responsibility for guiding others' actions. |
| Influence (.80)<br>Items = 9 | This is a measure of the tendency to get others to view and do things in a certain way. This trait is characterized by: being persuasive; negotiating well; impacting the thoughts and actions of others; gaining support and commitment from others; being diplomatic; and using tact. |
| Initiative (.77)<br>Items = 9 | This is a measure of the tendency to take action in a proactive, rather than reactive, manner. This trait is characterized by: a desire to take action where others might take a wait-and-see approach; a desire to find ways to get things started; a desire to volunteer to take on new responsibilities; and a willingness to take on new or additional challenges. |
| Self Confidence (.68)<br>Items = 7 | This is a measure of the tendency to believe in one's own abilities and skills. This trait is characterized by: a tendency to feel competent in several areas; a tendency to demonstrate an attitude that one can succeed in endeavors; and a belief that one is capable and self-determined. |
| Competitiveness (.82)<br>Items = 8 | This is a measure of the tendency to evaluate one's own performance in comparison to others. This trait is characterized by: a desire to do better than others in many ways; an enjoyment of situations that can lead to a clear winner and loser; and a preference for an environment in which people are differentiated by accomplishments that come |

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| | at a cost to others. |
| **Enthusiasm** | |
| Sociability (.86)<br>Items = 9 | This is a measure of the tendency to be highly engaged by any social situation. This trait is characterized by: being friendly; a desire to be involved in situations with high opportunity for interpersonal interaction; an enjoyment of other people's company; and a need to interact with others frequently throughout the day. |
| Energy Level (.81)<br>Items = 9 | This is a measure of the tendency to be highly active and energetic. This trait is characterized by: a need to keep busy doing something at all times; a preference for a fast-paced lifestyle; and a tendency to avoid inactive events or situations. |
| Risk-Taking (.81)<br>Items = 9 | This is a measure of the tendency to take chances based on limited information. This trait is characterized by: an enjoyment of situations with uncertainty; being entrepreneurial; deriving personal satisfaction from making decisions based on limited information; and being adventurous. |
| Optimism (.79)<br>Items = 9 | This is a measure of the tendency to believe that good things are possible. This trait is characterized by: showing high spirits in just about any situation; being happy, joyful, and excited about things; and demonstrating enthusiasm in challenging situations. |
| Adaptability (.67)<br>Items = 8 | This is a measure of the tendency to be open to change and considerable variety. This trait is characterized by: a willingness to change one's approach; being flexible; a willingness to adjust to constraints, multiple demands, and adversity; and demonstrating versatility in handling different types of people and situations. |
| **Agreeableness** | |
| **Compassion** | |
| Consideration (.80)<br>Items = 10 | This is a measure of the tendency to express care about other's well being. This trait is characterized by: showing concern for others; demonstrating compassion, warmth, and sensitivity towards others' feelings and needs; |

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| | and supporting or taking care of others in need. |
| Empathy (.70)<br>Items = 7 | This is a measure of the tendency to understand what others are experiencing and to convey that understanding to them. This trait is characterized by: a desire to listen to, understand, and accept others' problems or opinions; an ability to understand the practical and emotional needs of others; an ability to communicate to others the understanding of their experiences; an ability to respond to others in a way that is non-judgmental and respects them as unique human beings and full contributors to society; an ability to "feel with" as opposed to "feel for" others; and a capacity to identify with others on an emotional level. |
| Social Astuteness (.68)<br>Items = 8 | This is a measure of the tendency to accurately perceive and understand the meaning of social cues and use that information to accomplish a desired goal. This trait is characterized by: an ability to detect social cues and interpret how these social cues are related to the underlying motives of other people; a desire to understand how others might act based on their intentions, motivations, and concerns; and an ability to read and respond to the positions of others in a given situation. |
| Openness (.65)<br>Items = 7 | This is a measure of the tendency to accept and respect the individual differences of people. This trait is characterized by: an understanding of the uniqueness of all people; a desire to understand different cultures, values, opinions, and belief systems; a mind set that all people have value; and an openness to the possibility that all human differences must not be either bad or good. |
| Impressing (.48)<br>Items = 7 | This is a measure of the tendency to try to make a good impression on others. This trait is characterized by: a desire to please others; a tendency to tell people what they want to hear; the use of flattery and craftiness to manipulate the impressions held by others; |

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| | being cautious not to expose one's true self image; and not being frank and forthcoming. |
| **Teamwork (Politeness)** | |
| Interdependence (.71)<br>Items = 8 | This is a measure of the tendency to work well with others. This trait is characterized by: an ability to perform well in groups; a desire to work closely with others on shared work; active cooperation with others; a desire to build supportive networks of communication; flexible cooperation in conflict resolution situations; and a preference to work toward the goals of the group rather than individual goals. |
| Independence (.67)<br>Items = 8 | This is a measure of the tendency to be autonomous. This trait is characterized by: a preference to make decisions without input from others; a preference to not be dependent on others; and a desire to not be closely supervised or work in an interdependent group or organization. |
| **Neuroticism** | |
| **Volatility** | |
| Emotional Control (.79)<br>Items = 7 | This is a measure of the tendency to be even-tempered. This trait is characterized by: the ability to stay calm and collected when confronted with adversity, frustration or other difficult situations; an ability to avoid defensive reactions or hurt feelings as a result of others' comments; an ability to be emotionally unaffected by external events that one has no control over; and not showing extreme positive or negative mood swings. |
| Stress Tolerance (.81)<br>Items = 8 | This is a measure of the tendency to endure typically stressful situations without undue physical or emotional reaction. This trait is characterized by: being free from anxieties; not worrying excessively; demonstrating a relaxed approach to stressful situations; and an ability to tolerate stress imposed by other people or circumstances. |
| **Withdrawal** | |
| Negative Affectivity (.66)<br>Items = 7 | This is a measure of the tendency to be generally unsatisfied with many things, including but not limited to work. This trait is |

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| | characterized by: a tendency to be unsatisfied with one's position, organization, pay, and other aspects of work; a general negative attitude; and a general dissatisfaction with one's life events and surroundings. |
| Self-Awareness/Self-Insight (.76)<br>Items = 9 | This is the tendency to be aware of one's strengths and weaknesses. This trait is characterized by: self-insight into one's motives, needs, and values; an ability to avoid self-deception regarding strengths and weaknesses; an understanding of one's limitations; and the tendency to study and understanding one's own behavior. |
| Trust (.76)<br>Items = 7 | This is a measure of the tendency to believe that most people are good and well-intentioned. This trait is characterized by: a belief in the goodness of people; a belief that most people are trustworthy; and not being skeptical or cynical about the nature of peoples' intentions and behaviors. |
| **Conscientiousness** | |
| **Industriousness** | |
| Desire for Advancement (.80)<br>Items = 8 | This is a measure of the tendency to be ambitious in the advancement of one's career or position in organizational hierarchy. This trait is characterized by: a desire to get to the top levels of organizational hierarchy; a determination to succeed in one's chosen career path; a preference for advancement potential over job security; and a continual desire to get ahead of where one is currently in work and life in general. |
| Desire for Achievement (.72)<br>Items = 7 | This is a measure of the tendency to have a strong drive to realize personally meaningful goals. This trait is characterized by: being challenged by difficult goals; being energized by accomplishing goals; a desire to work hard to achieve goals; taking satisfaction from doing something difficult; and pushing one's self outside of one's comfort zone to achieve a goal. |
| Work Focus (.70)<br>Items = 9 | This is a measure of the tendency to be self-disciplined in one's approach to work. This is a trait characterized by: efficient work habits; |

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| | being planful and organized; being focused on the process of task implementation; being able to concentrate on what is most important at the moment; not being distracted easily by other's or one's own boredom; and not procrastinating on tasks that are unpleasant or not very exciting. |
| **Orderliness** | |
| Attention to Detail (.77)<br>Items = 9 | This is a measure of the tendency to be exacting and precise. This is a trait characterized by: a desire for accuracy, neatness, thoroughness, and completeness; the ability to spot minor imperfections or errors; and a meticulous approach to performing tasks. |
| Dutifulness (.69)<br>Items = 8 | .This is a measure of the tendency to be filled with a sense of moral obligations. This trait is characterized by: a desire to do what is right; the practice of good business ethics; a desire to meet moral and legal obligations; and an adherence to a set of commonly held or societal laws. |
| Responsibility (.77)<br>Items = 7 | This is a measure of the tendency to be reliable and dependable. This trait is characterized by: a willingness to behave in expected and agreed upon ways; following through on assignments and commitments; keeping promises; and accepting the consequences of one's own actions. |
| **Derailing Leadership (.84)** | |
| Ego-Centered (.64)<br>Items = 7 | This is a measure of the tendency to be self-centered and appear egotistical. This is a trait composite characterized by: appearing overly involved with and concerned about one's own well being and importance; an inflated evaluation of personal skills and abilities; appearing condescending to others; and an attitude of entitlement to position and rewards. |
| Manipulating (.72)<br>Items = 10 | This is a measure of the tendency to be self-serving and sly. This trait composite is characterized by: a tendency to try to cover up mistakes; the ability to protect oneself by shifting blame onto others; carefully sharing |

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| | information to serve one's own purpose to the detriment of others; and a willingness to take advantage of others. |
| Micro-Managing (.75)<br>Items = 7 | This is a measure of the tendency to over-manage once a person has advanced to higher levels of management. This trait composite is characterized by: staying involved in too many decisions rather than passing on responsibility; doing detailed work rather than delegating it; and staying too involved with direct reports rather than building teamwork among the staff. |
| Intimidating (.65)<br>Items = 7 | This is a measure of the tendency to use power in a threatening way. This syndrome is characterized by: acting cold and aloof; an abrasive approach to others, a bullying style; and the use of knowledge or power to create fear in or subdue others. |
| Passive-Aggressive (.64)<br>Items = 7 | This is a measure of the tendency to avoid confronting others, conveying acceptance or cooperation and yet appearing to behave in uncooperative and self-serving ways. This trait is characterized by: communicating or implying cooperation, conveying acceptance by lack of objection, or expressing support for another person's idea, but behaving in contradictory ways that serve ones self-interest or potentially undermines the efforts of others who are possible threats. |

Reliabilities are in parentheses.

**Table 4. Leadership Experience Inventory 23 Categories Sorted into 4 Domains**

General Management Experiences

. 1) Strategy development: Experience defining, planning, or shaping initiatives that set key strategic direction for the organization.
    - Involved in formulating company policies and/or key operating strategies
    - Involved in the development of a strategic business plan
. 2) Project management and implementation: Experience related to the management and/or implementation of key projects (e.g., technology upgrade, new facility).
    - Responsible for complex scheduling (e.g., multistage implementation of a project, a just-in-time production schedule)
    - Involved in the building of a new facility
. 3) Business development and marketing: Business development and/or marketing related experience.
    - Involved in the development of a marketing plan for a new region or unfamiliar client base
    - Responsible for soliciting new business on behalf of my organization
. 4) Business growth: Experience growing a new or existing business (e.g., new product line, new market).
    - Responsible for growing profits within my organizational unit at levels significantly greater than previously achieved
    - Involved in the development of a marketing plan for a new region or unfamiliar client base
. 5) Product development: Experience developing new or enhanced products.
    - Involved in the development of a new product or service
    - Involved in a major research or development project
. 6) Start-up business: Experience managing a start-up or new business.
    - Involved in starting up an organizational unit within another country (e.g., a German sales office for a British company)
    - Involved in starting up a new department, division and/or function that never existed before in my organization
. 7) Financial management: Experience involving financial management (e.g., P&L responsibilities, budget management).
    - Was responsible for carrying out a difficult budget submission
    - Developed a budget for an organizational unit
. 8) Operations: Experience related to core operations (e.g., procuring resources and facilities, scheduling production, delivering or servicing products/services for customers, maintaining and improving the quality of customer products/services).
    - Managed the daily operations for an organizational unit
    - Involved in a task force responsible for an operations project (e.g., installing a production line, developing a divisional budget)
. 9) Support functions: Experience where the main responsibilities are to provide

functional support (e.g., HR, IT, Marketing, Finance) to key organizational operations through both assigned roles and temporary assignments.

- Was responsible for reviewing, inspecting or auditing the practices of an organizational unit
- Involved in a project focused on technology (e.g., installed of a new computer system, conducted study on technology needs for organization)

. 10) External relations: Experience representing the organization externally (e.g., to customers, government, community).

- Involved in a lobby effort by my organization
- Actively represented my organization's interests with regulatory agencies or public interest groups (e.g., held meeting, served as spokesperson)

Overcoming Challenge and Adversity

. 11) Inherited problems and challenges: Experience taking over a situation with significant problems or challenges to be resolved.

- Took over an organizational unit where I had to solve major problems created by the previous manager
- Took over an organizational unit where corruption existed (e.g., leaks, bribery, altering of records)

. 12) Interpersonally challenging situations: Experiences that are challenging because of strong interpersonal components (e.g., adversarial, involving strong emotions).

- Worked with a difficult boss (e.g., short tempered, controlling, unsupportive)
- Managed relationships with difficult direct reports and/or peers (e.g., uncooperative, rigid, short tempered)

. 13) Downturns and/or failures: Experience managing through a downturn or responding to a failed initiative or failure in the business.

- Involved in a turnaround situation for a struggling organizational unit (e.g., poor financial performance, strained customer and/or supplier relationships)
- Involved in a major project or initiative that failed

. 14) Difficult financial situations: Experience dealing with difficult, challenging, and/or complex financial issues.

- Was responsible for carrying out a difficult budget submission
- Was responsible for resolving financial discrepancies

. 15) Difficult staffing situations: Staff related experiences that are challenging and/or adversarial in nature (e.g., poor performance, layoffs).

- Terminated a poorly performing employee.
- Took over an organizational unit suffering from a serious turnover problem

Risky and/or Critical Experiences

. 16) High risk situations: Experience with responsibility for situations that, while possibly promising significant returns, are very risky in terms of potential failure, costs, and/or negative impact on the organization.

- Was responsible for making a highly visible, risky decision where failure would have significant consequences (e.g., jobs lost, large financial losses)
- Involved in a project where failure would have significant financial consequences to my organization

. 17) Critical negotiations: Experience that includes negotiations in which the outcome is extremely important for the organization's future.

- Involved in negotiating a major business deal/contract (i.e., had major impact on revenue, had attention of senior management)
- Involved in renegotiating an agreement or contract in order to reverse operating losses

. 18) Crisis management: Experience responding to and managing an expected or unexpected crisis.

- Involved in an effort to resolve a crisis situation requiring immediate action (e.g., natural disaster damaged plant, key supplier unexpectedly shut down)
- Dealt with a serious crisis during a project (i.e., a crisis that would have caused the project to fail)

. 19) Highly critical/visible assignments or initiatives: Experience with responsibility for assignments or initiatives that are seen as highly critical and visible and have the attention of senior leaders and/or the public.

- Managed one of the key units for my organization (e.g., primary source of organization revenue, had primary attention of senior management)
- Was responsible for making a highly visible, risky decision where failure would have significant consequences (e.g., jobs lost, large financial losses)

Personal and Career Related Experience

. 20) Self-development: Experience focused on developing oneself.
    - Engaged in a structured self-development program (e.g., had a developmental plan, reviewed developmental progress regularly with manager)
    - Had a mentor or coach who provided support, advice and/or contacts critical to my professional development

. 21) Development of others: Experience focused on developing others.
    - Served in a mentor and/or coach role focused on the professional development of an employee (e.g., provided support, advice, contacts)
    - Responsible for developing others (i.e., direct reports, new employees)

. 22) International/cross-cultural: Experience that involves working with those from other cultures and/or physically working in other countries.
    - Built working relationships with individuals from other countries who did not share my native language or mother tongue and/or culture
    - Worked within a multicultural (i.e., multilingual) environment (e.g., American plant in Mexico, Canadian firm with suppliers from Europe and Asia)

. 23) Extracurricular activities: Experience gained outside of the job or organizational context.
    - Involved in an organization outside of work (e.g., professional

association, community group, social organization, school club)
- Actively involved in politics outside of work (e.g., council person, head of a city planning committee, campaign minister)

**Table 5. PROFILOR LF-10 24 Dimensions sorted into 8 Factors along with Composites and Overall**

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| **Thinking Factor** | |
| Analyze Issues (.88)<br>Items = 5 | Gathers relevant information systematically; considers a broad range of issues or factors; grasps complexities and perceives relationships among problems or issues; seeks input from others; uses accurate logic in analyses. |
| Use Sound Judgment (.89)<br>Items = 4 | Makes timely and sound decisions; makes decisions under conditions of uncertainty. |
| **Administrative Factor** | |
| Establish Plans (.89)<br>Items = 5 | Develops short- and long-range plans that are appropriately comprehensive, realistic, and effective in meeting goals; integrates planning efforts across work units. |
| Manage Execution (.89)<br>Items = 9 | Assigns responsibilities; delegates and empowers others; removes obstacles; allows for and contributes needed resources; coordinates work efforts when necessary; monitors progress. |
| **Leadership Factor** | |
| Provide Direction (.92)<br>Items = 5 | Fosters the development of a common vision; provides clear direction and priorities; clarifies roles and responsibilities. |
| Lead Courageously (.93)<br>Items = 7 | Steps forward to address difficult issues; puts self on the line to deal with important problems; stands firm when necessary. |
| Influence Others (.91)<br>Items = 6 | Asserts own ideas and persuades others; gains support and commitment from others; mobilizes people to take action. |
| Foster Teamwork (.93)<br>Items = 7 | Builds effective teams committed to organizational goals; fosters collaboration among team members and among teams; uses teams to address relevant issues. |
| Motivate Others (.94)<br>Items = 6 | Encourages and empowers others to achieve; establishes challenging performance standards; creates enthusiasm, a feeling of investment, and a desire to excel. |
| Coach & Develop (.92)<br>Items = 8 | Accurately assesses strengths and development needs of employees; gives |

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| | timely, specific feedback and helpful coaching; provides challenging assignments and opportunities for development. |
| Champion Change (.90)<br>Items = 5 | Challenges the status quo and champions new initiatives; acts as a catalyst of change and stimulates others to change; paves the way for needed changes; manages implementation effectively. |
| **Interpersonal Factor** | |
| Build Relationships (.93)<br>Items = 7 | Relates to people in an open, friendly, accepting manner; shows sincere interest in others and their concerns; initiates and develops relationships with others as a key priority. |
| Display Organizational Savvy (.87)<br>Items = 4 | Develops effective give-and-take relationships with others; understands the agendas and perspectives of others; recognizes and effectively balances the interests and needs of one's own group with those of the broader organization. |
| Manage Disagreements (.88)<br>Items = 4 | Brings substantive conflicts and disagreements into the open and attempts to resolve them collaboratively; builds consensus. |
| **Communication Factor** | |
| Speak Effectively (.88)<br>Items = 4 | Speaks clearly and expresses self well in groups and in one-to-one conversations. |
| Foster Open Communication (.88)<br>Items = 5 | Creates an atmosphere in which timely and high quality information flows smoothly between self and others; encourages the open expression of ideas and opinions. |
| Listen to Others (.93)<br>Items = 5 | Demonstrates attention to and conveys understanding of the comments and questions of others; listens well in a group. |
| **Motivation Factor** | |
| Drive for Results (.86)<br>Items = 4 | Drives for results and success; conveys a sense of urgency and drives issues to closure; persists despite obstacles and opposition. |
| Show Work Commitment (..88)<br>Items = 4 | Sets high standards of performance; pursues aggressive goals and works hard to achieve them. |
| **Self-Management Factor** | |
| Act with Integrity (.86) | Demonstrates principled leadership and |

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| Items = 5 | sound business ethics; shows consistency among principles, values, and behavior; builds trust with others through own authenticity and follow-through on commitments. |
| Demonstrate Adaptability (.89)<br>Items = 7 | Handles day-to-day work challenges confidently; is willing and able to adjust to multiple demands, shifting priorities, ambiguity, and rapid change; shows resilience in the face of constraints, frustrations, or adversity; demonstrates flexibility. |
| Develop Oneself (.85)<br>Items = 5 | Learns from experience; actively pursues learning and self-development; seeks feedback and welcomes unsolicited feedback; modifies behavior in light of feedback. |
| **Organizational Knowledge Factor** | |
| Use Technical/Functional Expertise (.87)<br>Items = 5 | Possesses up-to-date knowledge in the profession and industry; is regarded as an expert in the technical/functional area; accesses and uses other expert resources when appropriate. |
| Know the Business (.83)<br>Items = 4 | Shows understanding of issues relevant to the broad organization and business; keeps that knowledge up-to-date; has and uses cross-functional knowledge. |
| **Composites** | |
| Empowerment (.96)<br>Items = 20 | Measures the extent to which the manager delegates work to the lowest level appropriate; involves others in decisions affecting them; gives people latitude to do their jobs; and motivates by trusting people. |
| Career Issues (.96)<br>Items = 20 | Measures the degree to which the manager behaves in ways which may limit his/her success in the organization. |
| **Overall Performance** (.92)<br>Items = 5 | Measures the extent to which the manager is seen as productive and effective. |

Reliabilities are in parentheses.

**Table 6. Assessment Center Performance Factors**

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| **Thinking** | Approaches issues from a broad perspective, considering a wide range of information and factors; applies logic and experience to make timely, sound judgments; considers a broad range of internal and external factors when solving problems and making decisions; identifies critical, high pay-off strategies and prioritizes team efforts accordingly; grasps complexities and perceives relationships among problems or issues; uses information about the market and competitors in making decisions; adjusts actions and decisions for focus on critical strategic issues (e.g. customers, quality, competition, etc.). |
| **Management** | Develops plans that are appropriately comprehensive, realistic, and effective in meeting goals; organizes and prioritizes work activities; delegates responsibility; monitors progress. |
| **Leadership** | Steps forwards to address difficult issues; stands firm on behalf of the organization and key stakeholders; persuades others, gaining their support and commitment; accurately assesses employees' strengths and development needs; provides feedback, coaching, and opportunities to develop; uses teams and an empowering, collaborative approach on appropriate issues; fosters collaboration among teams and team members; challenges the status quo and champions new initiatives; acts as a catalyst and stimulates others to change; paves the way for needed changes; manages implementation effectively. |
| **Interpersonal** | Initiates and develops relationships with a wide variety of people based on trust; shows interest in and understanding of others' needs and concerns; brings substantive conflicts and disagreements into the open and attempts to resolve them collaboratively. |
| **Communication** | Ensures a smooth flow of information between self and others through clear speaking and writing, encouragement of open expression of ideas, and effective listening. |
| **Motivation** | Sets high personal standards of performance; drives for results and success; anticipates customer needs; takes action to meet customer needs; continually searches for ways to increase customer satisfaction. |
| **Self-Management** | Demonstrates confidence, maturity, and flexibility in response to work challenges; is open to feedback and change. |

**Table 7. Intercorrelations for the 10 Personality Variables (N = 1184)**

| | Intellect | Assertiveness | Enthusiasm | Compassion | Teamwork | Volatility | Withdrawal | Industriousness | Orderliness | Derailing Leadership |
|---|---|---|---|---|---|---|---|---|---|---|
| **Intellect** | - | | | | | | | | | |
| **Assertiveness** | .61** | - | | | | | | | | |
| **Enthusiasm** | .53** | .69** | - | | | | | | | |
| **Compassion** | .51** | .45** | .55** | - | | | | | | |
| **Teamwork** | .29** | .18** | .37** | .38** | - | | | | | |
| **Volatility** | .34** | .28** | .40** | .28** | .23** | - | | | | |
| **Withdrawal** | .42** | .41** | .49** | .51** | .43** | .43** | - | | | |
| **Industriousness** | .53** | .71** | .53** | .32** | .16** | .30** | .38** | - | | |
| **Orderliness** | .35** | .39** | .23** | .33** | .24** | .16** | .41** | .54** | - | |
| **Derailing Leadership** | .16** | .01 | .21** | .27** | .47** | .26** | .53** | .00 | .20** | - |

* significant at $p < 0.05$
** significant at $p < 0.01$

**Table 8. Intercorrelations for the Cognitive Ability Measures**

| | Wesman | EAS Vocabulary | EAS Spatial | EAS Numerical | EAS Verbal | EAS Total | Watson-Glaser |
|---|---|---|---|---|---|---|---|
| **Wesman** | - | | | | | | |
| **EAS Vocabulary** | .62** (N=1397) | - | | | | | |
| **EAS Spatial** | .38** (N=1386) | .19** (N=1395) | - | | | | |
| **EAS Numerical** | .47** (N=1405) | .27** (N=1409) | .41** (N=1401) | - | | | |
| **EAS Verbal** | .57** (N=1402) | .41** (N=1408) | .31** (N=1397) | .41** (N=1415) | - | | |
| **EAS Total** | .73** (N=1388) | .75** (N=1394) | .62** (N=1395) | .69** (N=1395) | .74** (N=1394) | - | |
| **Watson-Glaser** | .61** (N=2912) | .47** (N=1327) | .31** (N=1318) | .38** (N=1399) | .52** (N=1328) | .60** (N=1316) | - |

* significant at $p < 0.05$
** significant at $p < 0.01$

**Table 9. Intercorrelations for the 4 Categories of Experiences (N = 518)**

| | General Management | Overcoming Challenge & Adversity | Risky and/or Critical | Personal & Career Related |
|---|---|---|---|---|
| **General Management** | - | | | |
| **Overcoming Challenge & Adversity** | .86** | - | | |
| **Risky and/or Critical** | .94** | .89** | - | |
| **Personal & Career Related** | .68** | .71** | .66** | - |

* significant at $p < 0.05$
** significant at $p < 0.01$

**Table 10. Intercorrelations for the PROFILOR Behavioral Competencies (N = 4545)**

| | Thinking | Administration | Leadership | Interpersonal | Communication | Motivation | Self-Management | Organizational Knowledge |
|---|---|---|---|---|---|---|---|---|
| **Thinking** | - | | | | | | | |
| **Administration** | .85** | - | | | | | | |
| **Leadership** | .83** | .92** | - | | | | | |
| **Interpersonal** | .69** | .74** | .82** | - | | | | |
| **Communication** | .75** | .79** | .87** | .87** | - | | | |
| **Motivation** | .74** | .71** | .75** | .46** | .59** | - | | |
| **Self-Management** | .80** | .81** | .87** | .91** | .88** | .65** | - | |
| **Organizational Knowledge** | .80** | .69** | .67** | .49** | .58** | .65** | .60** | - |

* significant at $p < 0.05$
** significant at $p < 0.01$

**Table 11. Intercorrelations for the Campbell Behavioral Competencies (N = 4545)**

| | Technical Performance | Communication | Initiative, Persistence, & Effort |
|---|---|---|---|
| **Technical Performance** | (.61) | | |
| **Communication** | .47** | (.88) | |
| **Initiative, Persistence, & Effort** | .53** | .62** | (.90) |
| **Consideration, Support, Person-Centered** | .32** | .62** | .56** |
| **Initiating Structure, Guiding, Directing** | .46** | .70** | .69** |
| **Goal Emphasis** | .55** | .73** | .81** |
| **Empowerment, Facilitation** | .39** | .67** | .60** |
| **Training, Coaching** | .46** | .69** | .69** |
| **Serving as a Model** | .47** | .73** | .73** |
| **Decision Making, Problem Solving, Strategic Innovation** | .75** | .73** | .75** |
| **Goal Setting, Planning, Organizing, Budgeting** | .58** | .67** | .76** |
| **Coordination** | .47** | .72** | .68** |
| **Monitoring Unit Effectiveness** | .37** | .50** | .59** |
| **External Representation** | .61** | .70** | .66** |
| **Administration** | .42** | .63** | .64** |
| **Commitment, Compliance** | .48** | .62** | .64** |

Reliabilities are in parentheses along the diagonal
* significant at $p < 0.05$
** significant at $p < 0.01$

Table 11 (continued)

| | Consideration, Support, Person-Centered | Initiating Structure, Guiding, Directing | Goal Emphasis | Empowerment, Facilitation | Training, Coaching | Serving as a Model |
|---|---|---|---|---|---|---|
| **Technical Performance Communication Initiative, Persistence, & Effort** | | | | | | |
| **Consideration, Support, Person-Centered** | (.97) | | | | | |
| **Initiating Structure, Guiding, Directing** | .81** | (.90) | | | | |
| **Goal Emphasis** | .68** | .85** | (.89) | | | |
| **Empowerment, Facilitation** | .90** | .85** | .78** | (.95) | | |
| **Training, Coaching** | .82** | .89** | .84** | .89** | (.94) | |
| **Serving as a Model** | .89** | .86** | .82** | .88** | .85** | (.95) |
| **Decision Making, Problem Solving, Strategic Innovation** | .61** | .75** | .85** | .71** | .76** | .80** |
| **Goal Setting, Planning, Organizing, Budgeting** | .62** | .85** | .89** | .74** | .83** | .79** |
| **Coordination** | .89** | .85** | .82** | .89** | .84** | .93** |
| **Monitoring Unit Effectiveness** | .37** | .68** | .72** | .53** | .68** | .54** |
| **External Representation** | .79** | .78** | .75** | .76** | .74** | .86** |
| **Administration** | .76** | .82** | .77** | .80** | .79** | .79** |
| **Commitment, Compliance** | .76** | .77** | .76** | .77** | .74** | .85** |

Reliabilities are in parentheses along the diagonal
* significant at $p < 0.05$
** significant at $p < 0.01$

Table 11 (continued)

| | Decision Making, Problem Solving, | Goal Setting, Planning, | Coordination | Monitoring Unit Effectiveness | External Representation | Administration | Commitment, Compliance |
|---|---|---|---|---|---|---|---|
| **Technical Performance** | | | | | | | |
| **Communication** | | | | | | | |
| **Initiative, Persistence, & Effort** | | | | | | | |
| **Consideration, Support, Person-Centered** | | | | | | | |
| **Initiating Structure, Guiding, Directing** | | | | | | | |
| **Goal Emphasis** | | | | | | | |
| **Empowerment, Facilitation** | | | | | | | |
| **Training, Coaching** | | | | | | | |
| **Serving as a Model** | | | | | | | |
| **Decision Making, Problem Solving, Strategic Innovation** | (.94) | | | | | | |
| **Goal Setting, Planning, Organizing, Budgeting** | .85** | (.92) | | | | | |
| **Coordination** | .79** | .79** | (.93) | | | | |
| **Monitoring Unit Effectiveness** | .60** | .76** | .52** | (.79) | | | |
| **External Representation** | .79** | .72** | .86** | .45** | (.81) | | |
| **Administration** | .68** | .76** | .81** | .58** | .70** | (.86) | |
| **Commitment, Compliance** | .75** | .76** | .83** | .52** | .77** | .76** | (.76) |

Reliabilities are in parentheses along the diagonal
* significant at $p < 0.05$
** significant at $p < 0.01$

**Table 12. Intercorrelations for the 5 main Performance Criteria**

| | Motivation Performance | Self-Management Performance | Overall Leadership Performance | Overall Management Performance | Annual Salary |
|---|---|---|---|---|---|
| **Motivation Performance** | - | | | | |
| **Self-Management Performance** | .23** (N=2259) | - | | | |
| **Overall Leadership Performance** | .31** (N=2265) | .43** (N=2260) | - | | |
| **Overall Management Performance** | .34** (N=2265) | .25** (N=2260) | .39** (N=2266) | - | |
| **Annual Salary** | .04 (N=1744) | .11** (N=1741) | .05 (N=1745) | .06** (N=1746) | - |

* significant at $p < 0.05$
** significant at $p < 0.01$

**Table 13. Personality Descriptive Statistics (Z-scores)**

| | Bottom Level N = 207 | | Middle Level N = 578 | | Top Level N = 255 | |
|---|---|---|---|---|---|---|
| **Personality Scale** | **Mean** | **SD** | **Mean** | **SD** | **Mean** | **SD** |
| Openness: | | | | | | |
| Intellect | -.12[c] | 1.14 | -.05[b] | .95 | .12[bc] | .94 |
| Extraversion: | | | | | | |
| Assertiveness | -.16[**c**] | 1.07 | -.03[**b**] | .98 | .19[**bc**] | .84 |
| Enthusiasm | -.05[c] | 1.05 | -.07[**b**] | 1.00 | .17[**bc**] | .96 |
| Agreeableness: | | | | | | |
| Compassion | -.12[c] | 1.00 | -.01 | .95 | .07[c] | 1.03 |
| Teamwork (Politeness) | -.20[**ac**] | 1.00 | -.01[ab] | .97 | .17[**bc**] | 1.03 |
| Neuroticism: | | | | | | |
| Volatility | -.06 | 1.03 | -.02 | 1.00 | .09 | .95 |
| Withdrawal | -.12[**c**] | 1.07 | -.02[b] | .98 | .14[**bc**] | 1.01 |
| Conscientiousness: | | | | | | |
| Industriousness | -.15[**c**] | 1.14 | -.05[**b**] | .98 | .15[**bc**] | .86 |
| Orderliness | -.15[a] | 1.02 | .02[a] | .97 | .01 | 1.01 |
| Derailing Leadership | -.21[**ac**] | .99 | .02[**a**] | 1.01 | .15[**c**] | .97 |

[a] denotes significant difference between bottom and middle levels $p < .05$; [**a**] $p < .01$
[b] denotes significant difference between middle and top levels $p < .05$; [**b**] $p < .01$
[c] denotes significant difference between bottom and top levels $p < .05$; [**c**] $p < .01$

**Table 14. Cognitive Ability Descriptive Statistics (Z-scores)**

| | Bottom Level | | Middle Level | | Top Level | |
|---|---|---|---|---|---|---|
| **Cognitive Ability Scale** | **Mean** | **SD** | **Mean** | **SD** | **Mean** | **SD** |
| Wesman | .08[a] | .99 | -.06[a] | 1.02 | -.01 | .99 |
| | (N = 742) | | (N = 1422) | | (N = 628) | |
| EAS Vocabulary | -.01 | .99 | -.03 | 1.01 | .10 | 1.02 |
| | (N = 430) | | (N = 630) | | (N = 247) | |
| EAS Spatial | .06 | .95 | -.06 | 1.01 | .00 | 1.05 |
| | (N = 430) | | (N = 630) | | (N = 240) | |
| EAS Numerical | .05 | .99 | -.04 | 1.00 | .03 | 1.02 |
| | (N = 447) | | (N = 669) | | (N = 271) | |
| EAS Verbal | .06 | 1.00 | -.05 | .98 | .03 | 1.04 |
| | (N = 431) | | (N = 635) | | (N = 247) | |
| EAS Total | .05 | 1.01 | -.07[b] | 1.00 | .08[b] | 1.00 |
| | (N = 430) | | (N = 628) | | (N = 241) | |
| Watson-Glaser | .04 | 1.00 | -.03 | .99 | -.03 | .98 |
| | (N = 842) | | (N = 1620) | | (N = 670) | |

[a] denotes significant difference between bottom and middle levels $p < .05$; [a] $p < .01$
[b] denotes significant difference between middle and top levels $p < .05$; [b] $p < .01$
[c] denotes significant difference between bottom and top levels $p < .05$; [c] $p < .01$

**Table 15. Leadership Experience Inventory Descriptive Statistics (Z-scores)**

| | Bottom Level N = 118 | | Middle Level N = 249 | | Top Level N = 131 | |
|---|---|---|---|---|---|---|
| **LEI Scales** | **Mean** | **SD** | **Mean** | **SD** | **Mean** | **SD** |
| **General Management:** | -.52[ac] | .98 | -.03[ab] | .87 | .57[bc] | .91 |
| Strategy Development | -.53[ac] | .99 | -.08[ab] | .87 | .62[bc] | .91 |
| Project Management & Implementation | -.50[ac] | 1.00 | -.03[ab] | .90 | .50[bc] | .95 |
| Business Development & Marketing | -.26[c] | 1.01 | -.09[b] | .93 | .40[bc] | 1.01 |
| Business Growth | -.36[ac] | 1.05 | -.08[ab] | .90 | .47[bc] | .97 |
| Product Development | -.24[ac] | .97 | -.02[ab] | .99 | .25[bc] | 1.00 |
| Start-Up Business | -.39[ac] | .90 | -.05[ab] | .90 | .43[bc] | 1.11 |
| Financial Management | -.70[ac] | .96 | .02[ab] | .87 | .59[bc] | .86 |
| Operations | -.58[ac] | .96 | .04[ab] | .93 | .45[bc] | .92 |
| Support Functions | -.63[ac] | .94 | .06[ab] | .94 | .45[bc] | .89 |
| External Relations | -.38[ac] | .94 | -.10[ab] | .94 | .53[bc] | .97 |
| **Overcoming Challenge & Adversity:** | -.66[ac] | .91 | .07[ab] | .85 | .53[bc] | .88 |
| Inherited Problems & Challenges | -.70[ac] | .88 | .10[ab] | .93 | .44[bc] | .90 |
| Interpersonally Challenging Situations | -.66[ac] | .99 | .05[ab] | .89 | .49[bc] | .90 |
| Downturns and/or Failures | -.56[ac] | .90 | .02[ab] | .93 | .47[bc] | .96 |
| Difficult Financial Situations | -.64[ac] | .92 | .02[ab] | .90 | .55[bc] | .92 |
| Difficult Staffing Situations | -.70[ac] | .92 | .08[ab] | .89 | .48[bc] | .93 |
| **Risky and/or Critical:** | -.58[ac] | .94 | -.04[ab] | .84 | .61[bc] | .95 |
| High Risk Situations | -.55[ac] | 1.01 | -.05[ab] | .84 | .59[bc] | .96 |
| Critical Negotiations | -.51[ac] | .93 | -.05[ab] | .89 | .56[bc] | 1.00 |
| Crisis Management | -.62[ac] | .91 | .03[ab] | .89 | .51[bc] | .97 |
| Highly Critical/Visible Assignments or Initiatives | -.62[ac] | .95 | -.05[ab] | .85 | .65[bc] | .93 |
| **Personal & Career Related:** | -.29[ac] | 1.01 | -.02[ab] | .93 | .35[bc] | .91 |
| Self-Development | -.08[c] | 1.01 | -.10[b] | .98 | .25[bc] | .99 |
| Development of Others | -.61[ac] | 1.11 | .06[ab] | .90 | .43[bc] | .80 |
| International/Cross-Cultural | -.07 | .97 | .00 | .98 | .07 | 1.07 |
| Extracurricular Activities | -.15[c] | .96 | -.07[b] | 1.01 | .27[bc] | .97 |
| **Overall Experience:** | -.58[ac] | .96 | -.03[ab] | .85 | .58[bc] | .90 |

[a] denotes significant difference between bottom and middle levels $p < .05$; [a] $p < .01$
[b] denotes significant difference between middle and top levels $p < .05$; [b] $p < .01$
[c] denotes significant difference between bottom and top levels $p < .05$; [c] $p < .01$

**Table 16. PROFILOR Behavioral Competency Descriptive Statistics (Z-scores)**

| | Bottom Level N = 1087 | | Middle Level N = 2068 | | Top Level N = 852 | |
|---|---|---|---|---|---|---|
| **Factor** | **Mean** | **SD** | **Mean** | **SD** | **Mean** | **SD** |
| Thinking | -.14[ac] | 1.06 | .01[ab] | .96 | .09[bc] | 1.02 |
| Administrative | -.16[ac] | 1.00 | .03[a] | .98 | .08[c] | 1.03 |
| Leadership | -.17[ac] | 1.02 | .03[a] | .98 | .10[c] | 1.00 |
| Interpersonal | -.09[ac] | 1.02 | .01[a] | .99 | .04[c] | .99 |
| Communication | -.08[ac] | 1.03 | .01[a] | .99 | .03[c] | .97 |
| Motivation | -.15[ac] | 1.03 | .02[ab] | .98 | .13[bc] | .99 |
| Self-Management | -.07 | 1.03 | .00 | .99 | .01 | 1.00 |
| Organizational Knowledge | -.16[ac] | 1.04 | .01[ab] | .98 | .18[bc] | .96 |
| Empowerment | -.12[ac] | 1.02 | .02[a] | .98 | .06[c] | 1.01 |
| Career Issues | -.08[ac] | 1.05 | .01[a] | .98 | .02[c] | 1.00 |
| Overall Performance | -.05 | 1.03 | .01 | .98 | .00 | 1.04 |

[a] denotes significant difference between bottom and middle levels $p < .05$; [a] $p < .01$
[b] denotes significant difference between middle and top levels $p < .05$; [b] $p < .01$
[c] denotes significant difference between bottom and top levels $p < .05$; [c] $p < .01$

**Table 17. Campbell Behavioral Competency Descriptive Statistics (Z-scores)**

| | Bottom Level N = 1087 | | Middle Level N = 2068 | | Top Level N = 852 | |
|---|---|---|---|---|---|---|
| **Factors** | **Mean** | **SD** | **Mean** | **SD** | **Mean** | **SD** |
| **General Job Performance:** | | | | | | |
| Technical Performance | -.04[c] | 1.03 | -.01 | .99 | .07[c] | .99 |
| Communication | -.12[ac] | 1.04 | .02[a] | .97 | .09[c] | .98 |
| Initiative, Persistence, & Effort | -.12[ac] | 1.04 | .00[ab] | .98 | .11[bc] | .97 |
| **Overall Leadership:** | -.14[ac] | 1.03 | .03[a] | .98 | .07[c] | 1.00 |
| Consideration, Support, Person-Centered | -.06 | 1.05 | .01 | .99 | .02 | .98 |
| Initiating Structure, Guiding, Directing | -.09[a] | 1.02 | .02[a] | .98 | -.01 | 1.04 |
| Goal Emphasis | -.23[ac] | 1.02 | .03[ab] | .98 | .17[bc] | .99 |
| Empowerment, Facilitation | -.17[ac] | 1.00 | .03[a] | .98 | .10[c] | 1.00 |
| Training, Coaching | -.16[ac] | 1.02 | .04[a] | .98 | .08[c] | 1.00 |
| Serving as a Model | -.10[ac] | 1.03 | .02[a] | .99 | .03[c] | .99 |
| **Overall Management:** | -.16[ac] | 1.02 | .02[a] | .98 | .09[c] | 1.01 |
| Decision Making, Problem Solving, Strategic Innovation | -.18[ac] | 1.05 | .02[ab] | .96 | .15[bc] | .99 |
| Goal Setting, Planning, Organizing, Budgeting | -.17[ac] | 1.00 | .03[a] | .98 | .08[c] | 1.03 |
| Coordination | -.13[ac] | 1.08 | .01[a] | 1.04 | .08[c] | 1.05 |
| Monitoring Unit Effectiveness | -.20[ac] | .98 | .06[a] | .99 | .09[c] | 1.05 |
| External Representation | -.07[c] | 1.04 | -.01 | 1.00 | .06[c] | .97 |
| Administration | -.09[ac] | 1.03 | -.01[a] | .99 | .02[c] | 1.01 |
| Commitment, Compliance | -.16[ac] | 1.02 | .03[a] | .99 | .09[c] | 1.01 |

[a] denotes significant difference between bottom and middle levels $p < .05$; [a] $p < .01$
[b] denotes significant difference between middle and top levels $p < .05$; [b] $p < .01$
[c] denotes significant difference between bottom and top levels $p < .05$; [c] $p < .01$

**Table 18. Assessment Center Performance Factors Descriptive Statistics (Z-scores)**

| | Bottom Level N = 530 | | Middle Level N = 1117 | | Top Level N = 446 | |
|---|---|---|---|---|---|---|
| **Factors** | **Mean** | **SD** | **Mean** | **SD** | **Mean** | **SD** |
| Motivation | -.04 | 1.00 | .02 | 1.00 | .08 | .99 |
| Thinking | .00 | 1.05 | -.05[b] | .96 | .10[b] | 1.00 |
| Management | -.08[c] | 1.00 | .01 | .98 | .11[c] | 1.02 |
| Communication | -.07[c] | 1.03 | .00 | .98 | .09[c] | .99 |
| Interpersonal | -.11[ac] | 1.05 | .03[a] | 1.00 | .07[c] | 1.00 |
| Leadership | -.22[ac] | 1.05 | .05[ab] | .95 | .19[bc] | .98 |
| Self-Management | -.17[ac] | 1.00 | .05[a] | .97 | .08[c] | 1.00 |
| Overall Management Performance | -.05[c] | 1.02 | -.02[b] | .96 | .13[bc] | 1.02 |
| Overall Leadership Performance | -.17[ac] | 1.03 | .03[ba] | .97 | .14[bc] | 1.00 |
| Overall Performance | -.10[ac] | .64 | .02[ab] | .61 | .10[bc] | .65 |

[a] denotes significant difference between bottom and middle levels $p < .05$; [a] $p < .01$
[b] denotes significant difference between middle and top levels $p < .05$; [b] $p < .01$
[c] denotes significant difference between bottom and top levels $p < .05$; [c] $p < .01$

**Table 19. Euclidean Distances between Mean Profiles**

| | Bottom-Middle | Middle-Top | Bottom-Top |
|---|---|---|---|
| **Personality** | .42 | .52 | .86 |
| **Cognitive Ability** | .27 | .24 | .18 |
| **Experiences** | 2.52 | 2.34 | 4.72 |
| General Management | 1.47 | 1.63 | 3.01 |
| Overcoming Challenge & Adversity | 1.59 | .98 | 2.55 |
| Risky/Critical | 1.10 | 1.23 | 2.31 |
| Personal & Career Related | .68 | .62 | 1.18 |
| **PROFILOR Factors** | .46 | .24 | .68 |
| **Campbell Factors** | .65 | .29 | .91 |
| Leadership Factors | .42 | .16 | .57 |
| Management Factors | .46 | .19 | .63 |

**Table 20. Rank Order Comparisons for Raw Score Means of PROFILOR Competencies**

| **Bottom Level** | | | **Middle Level** | | | **Top Level** | | |
|---|---|---|---|---|---|---|---|---|
| | Mean | SD | | Mean | SD | | Mean | SD |
| 1. Motivation | 3.987 | .38 | 1. Motivation | 4.050 | .37 | 1. Motivation | 4.092 | .37 |
| 2. Organizational Knowledge | 3.810 | .36 | 2. Organizational Knowledge | 3.868 | .34 | 2. Organizational Knowledge | 3.927 | .34 |
| 3. Thinking | 3.789 | .36 | 3. Thinking | 3.842 | .35 | 3. Thinking | 3.867 | .35 |
| 4. Communication | 3.775 | .37 | 4. Communication | 3.805 | .35 | 4. Communication | 3.813 | .35 |
| 5. Self-Management | 3.730 | .37 | 5. Self-Management | 3.756 | .36 | 5. Self-Management | 3.760 | .36 |
| 6. Interpersonal | 3.674 | .43 | 6. Interpersonal | 3.716 | .41 | 6. Interpersonal | 3.728 | .41 |
| 7. Administrative | 3.632 | .34 | 7. Administrative | 3.697 | .34 | 7. Leadership | 3.715 | .37 |
| 8. Leadership | 3.614 | .38 | 8. Leadership | 3.689 | .36 | 8. Administrative | 3.710 | .35 |

Rating Scale of Competence: 1 = Not at all, 5 = To a great extent

**Table 21. Rank Order Comparisons of Raw Mean Scores for Campbell Competencies**

| Bottom Level | Mean | SD | Middle Level | Mean | SD | Top Level | Mean | SD |
|---|---|---|---|---|---|---|---|---|
| 1. Technical Performance | 4.001 | .41 | 1. Technical Performance | 4.022 | .39 | 1. Technical Performance | 4.053 | .40 |
| 2. Initiative, Persistence, Effort | 3.930 | .39 | 2. Initiative, Persistence, Effort | 3.975 | .37 | 2. Initiative, Persistence, Effort | 4.015 | .36 |
| 3. Commitment, Compliance | 3.833 | .35 | 3. Commitment, Compliance | 3.896 | .34 | 3. Commitment, Compliance | 3.917 | .35 |
| 4. Communication | 3.802 | .39 | 4. Communication | 3.852 | .37 | 4. Decision Making, Problem Solving, Strategic Innovation | 3.892 | .33 |
| 5. Decision Making, Problem Solving, Strategic Innovation | 3.782 | .35 | 5. Decision Making, Problem Solving, Strategic Innovation | 3.847 | .35 | 5. Communication | 3.880 | .37 |
| 6. Consideration, Support, Person-Centered | 3.760 | .45 | 6. Goal Emphasis | 3.818 | .35 | 6. Goal Emphasis | 3.864 | .36 |
| 7. Goal Emphasis | 3.724 | .37 | 7. Consideration, Support, Person-Centered | 3.790 | .42 | 7. Consideration, Support, Person-Centered | 3.793 | .42 |
| 8. Serving as a Model | 3.706 | .37 | 8. Serving as a Model | 3.746 | .35 | 8. Serving as a Model | 3.750 | .35 |
| 9. Initiating Structure, Guiding, Directing | 3.680 | .41 | 9. Initiating Structure, Guiding, Directing | 3.728 | .40 | 9. Initiating Structure, Guiding, Directing | 3.722 | .42 |
| 10. Administration | 3.676 | .40 | 10. Administration | 3.707 | .38 | 10. Administration | 3.720 | .39 |
| 11. External Representation | 3.665 | .46 | 11. External Representation | 3.690 | .44 | 11. External Representation | 3.715 | .43 |
| 12. Empowerment, Facilitation | 3.612 | .37 | 12. Empowerment, Facilitation | 3.685 | .36 | 12. Empowerment, Facilitation | 3.712 | .37 |
| 13. Coordination | 3.610 | .39 | 13. Monitoring Unit Effectiveness | 3.674 | .42 | 13. Monitoring Unit Effectiveness | 3.689 | .45 |
| 14. Goal Setting, Planning, Organizing, Budgeting | 3.597 | .37 | 14. Goal Setting, Planning, Organizing, Budgeting | 3.671 | .37 | 14. Goal Setting, Planning, Organizing, Budgeting | 3.688 | .39 |
| 15. Monitoring Unit Effectiveness | 3.563 | .42 | 15. Coordination | 3.661 | .37 | 15. Coordination | 3.687 | .38 |
| 16. Training, Coaching | 3.517 | .40 | 16. Training, Coaching | 3.596 | .39 | 16. Training, Coaching | 3.613 | .40 |

Rating Scale of Competence: 1 = Not at all, 5 = To a great extent

**Table 22. Rank Order of Assessment Center Performance Factors**

| Bottom Level | | | Middle Level | | | Top Level | | |
|---|---|---|---|---|---|---|---|---|
| | Mean | SD | | Mean | SD | | Mean | SD |
| 1. Motivation | 3.371 | .47 | 1. Motivation | 3.402 | .47 | 1. Motivation | 3.428 | .47 |
| 2. Thinking | 3.149 | .56 | 2. Self-Management | 3.146 | .47 | 2. Thinking | 3.206 | .53 |
| 3. Communication | 3.046 | .47 | 3. Thinking | 3.124 | .51 | 3. Self-Management | 3.157 | .49 |
| 4. Self-Management | 3.039 | .49 | 4. Communication | 3.080 | .45 | 4. Communication | 3.118 | .45 |
| 5. Interpersonal | 2.940 | .44 | 5. Interpersonal | 3.002 | .44 | 5. Interpersonal | 3.020 | .44 |
| 6. Management | 2.900 | .44 | 6. Management | 2.941 | .43 | 6. Management | 2.983 | .45 |
| 7. Leadership | 2.702 | .45 | 7. Leadership | 2.910 | .41 | 7. Leadership | 2.973 | .43 |

Ratings Scale of Effectiveness: 1 = Not effective, 5 = Very effective

**Table 23. Rank Order Comparison of Raw Mean Score Differences Between Levels for PROFILOR Competencies**

| Bottom to Middle Level | | Middle to Top Level | | Bottom to Top Level | |
|---|---|---|---|---|---|
| 1. Leadership | .075 | 1. Organizational Knowledge | .059 | 1. Organizational Knowledge | .117 |
| 2. Administrative | .065 | 2. Motivation | .042 | 2. Motivation | .105 |
| 3. Motivation | .063 | 3. Leadership | .026 | 3. Leadership | .101 |
| 4. Organizational Knowledge | .058 | 4. Thinking | .025 | 4. Administrative | .078 |
| 5. Thinking | .053 | 5. Administrative | .013 | 5. Thinking | .077 |
| 6. Interpersonal | .043 | 6. Interpersonal | .011 | 6. Interpersonal | .054 |
| 7. Communication | .030 | 7. Communication | .009 | 7. Communication | .039 |
| 8. Self-Management | .026 | 8. Self-Management | .004 | 8. Self-Management | .030 |

**Table 24. Rank Order Comparisons of Raw Score Mean Differences Between Levels for Campbell Competencies**

| Bottom to Middle Level | | Middle to Top Level | | Bottom to Top Level | |
|---|---|---|---|---|---|
| 1. Monitoring Unit Effectiveness | .111 | 1. Goal Emphasis | .047 | 1. Goal Emphasis | .141 |
| 2. Goal Emphasis | .094 | 2. Decision Making, Problem Solving, Strategic Innovation | .045 | 2. Monitoring Unit Effectiveness | .126 |
| 3. Training, Coaching | .079 | 3. Initiative, Persistence, Effort | .040 | 3. Decision Making, Problem Solving, Strategic Innovation | .110 |
| 4. Goal Setting, Planning, Organizing, Budgeting | .075 | 4. External Representation | .032 | 4. Empowerment, Facilitation | .100 |
| 5. Empowerment, Facilitation | .073 | 5. Technical Performance | .031 | 5. Training, Coaching | .097 |
| 6. Decision Making, Problem Solving, Strategic Innovation | .065 | 6. Communication | .028 | 6. Goal Setting, Planning, Organizing, Budgeting | .092 |
| 7. Commitment, Compliance | .063 | 7. Empowerment, Facilitation | .027 | 7. Initiative, Persistence, Effort | .085 |
| 8. Coordination | .051 | 8. Coordination | .026 | 8. Commitment, Compliance | .083 |
| 9. Communication | .050 | 9. Commitment, Compliance | .021 | 9. Communication | .078 |
| 10. Initiating Structure, Guiding, Directing | .047 | 10. Training, Coaching | .018 | 10. Coordination | .077 |
| 11. Initiative, Persistence, Effort | .045 | 11. Goal Setting, Planning, Organizing, Budgeting | .017 | 11. External Representation | .058 |
| 12. Serving as a Model | .040 | 12. Monitoring Unit Effectiveness | .015 | 12. Technical Performance | .045 |
| 13. Administration | .031 | 13. Administration | .013 | 13. Administration | .044 |
| 14. Consideration, Support, Person-Centered | .030 | 14. Serving as a Model | .004 | 14. Serving as a Model | .043 |
| 15. External Representation | .025 | 15. Consideration, Support, Person-Centered | .003 | 15. Initiating Structure, Guiding, Directing | .035 |
| 16. Technical Performance | .014 | 16. Initiating Structure, Guiding, Directing | -.013 | 16. Consideration, Support, Person-Centered | .034 |

**Table 25. Rank Order Comparisons of Raw Score Mean Differences Between Levels for Experiences**

| Most Change from Bottom to Middle | | Most Change from Middle to Top | | Most Change from Bottom to Top | |
|---|---|---|---|---|---|
| 1. Interpersonally Challenging Situations | 22.82 | 1. Highly Critical/Visible Assignments or Initiatives | 22.26 | 1. Highly Critical/Visible Assignments or Initiatives | 40.48 |
| 2. Highly Critical/Visible Assignments or Initiatives | 18.21 | 2. Critical Negotiations | 15.99 | 2. Interpersonally Challenging Situations | 36.84 |
| 3. Financial Management | 15.12 | 3. Strategy Development | 14.22 | 3. Critical Negotiations | 27.85 |
| 4. Difficult Staffing Situations | 12.40 | 4. External Relations | 14.04 | 4. Financial Management | 27.00 |
| 5. Critical Negotiations | 11.86 | 5. Interpersonally Challenging Situations | 14.03 | 5. Project Management & Implementation | 23.80 |
| 6. Difficult Financial Situations | 11.60 | 6. Project Management & Implementation | 12.52 | 6. Strategy Development | 23.54 |
| 7. Project Management & Implementation | 11.28 | 7. Financial Management | 11.88 | 7. Difficult Financial Situations | 20.85 |
| 8. Operations | 9.60 | 8. High Risk Situations | 10.18 | 8. External Relations | 20.23 |
| 9. Strategy Development | 9.31 | 9. Difficult Financial Situations | 9.25 | 9. Difficult Staffing Situations | 18.76 |
| 10. High Risk Situations | 7.94 | 10. Business Growth | 7.24 | 10. High Risk Situations | 18.12 |
| 11. Inherited Problems & Challenges | 7.69 | 11. Business Development & Marketing | 6.69 | 11. Operations | 15.99 |
| 12. Development of Others | 6.99 | 12. Operations | 6.38 | 12. Crisis Management | 11.47 |
| 13. Crisis Management | 6.61 | 13. Difficult Staffing Situations | 6.35 | 13. Business Growth | 11.01 |
| 14. External Relations | 6.20 | 14. Crisis Management | 4.86 | 14. Inherited Problems & Challenges | 10.96 |
| 15. Support Functions | 5.58 | 15. Downturns and/or Failures | 4.18 | 15. Development of Others | 10.79 |
| 16. Downturns and/or Failures | 5.37 | 16. Development of Others | 3.80 | 16. Downturns and/or Failures | 9.55 |
| 17. Business Growth | 3.77 | 17. Self-Development | 3.39 | 17. Business Development & Marketing | 9.10 |

Table 25 (continued)

| Most Change from Bottom to Middle | | Most Change from Middle to Top | | Most Change from Bottom to Top | |
|---|---|---|---|---|---|
| 18. Business Development & Marketing | 2.41 | 18. Inherited Problems & Challenges | 3.28 | 18. Support Functions | 8.83 |
| 19. Start-Up Business | 1.65 | 19. Support Functions | 3.25 | 19. Start-Up Business | 4.09 |
| 20. Product Development | 1.42 | 20. Extracurricular Activities | 2.97 | 20. Extracurricular Activities | 3.67 |
| 21. International/Cross-Cultural | .87 | 21. Start-Up Business | 2.43 | 21. Self-Development | 3.19 |
| 22. Extracurricular Activities | .70 | 22. Product Development | 1.75 | 22. Product Development | 3.18 |
| 23. Self-Development | -.20 | 23. International/Cross-Cultural | .96 | 23. International/Cross-Cultural | 1.82 |

**Table 26. Rank Order of Raw Score Mean Differences Between Levels for the Assessment Center Factors**

| Bottom to Middle Level | | Middle to Top Level | | Bottom to Top Level | |
|---|---|---|---|---|---|
| 1. Leadership | .118 | 1. Thinking | .082 | 1. Leadership | .181 |
| 2. Self-Management | .107 | 2. Leadership | .063 | 2. Self-Management | .118 |
| 3. Interpersonal | .062 | 3. Management | .042 | 3. Management | .083 |
| 4. Management | .041 | 4. Communication | .038 | 4. Interpersonal | .080 |
| 5. Communication | .034 | 5. Motivation | .026 | 5. Communication | .072 |
| 6. Motivation | .031 | 6. Interpersonal | .018 | 6. Motivation | .057 |
| 7. Thinking | -.025 | 7. Self-Management | .011 | 6. Thinking | .057 |

**Table 27. Bottom Level Personality Correlations with Performance (N = 124)**

| | Motivation | Thinking | Management | Communication | Interpersonal | Leadership | Self-Management | Overall Management Performance | Overall Leadership Performance | Overall Performance | Salary (N=136) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Openness:** | | | | | | | | | | | |
| Intellect | .33** | .23** | .11 | -.06 | .00 | .10 | .22* | .21* | .01 | .20* | .20* |
| **Extraversion:** | | | | | | | | | | | |
| Assertive | .53** | .09 | .15 | .01 | .03 | .21* | .14 | .15 | .09 | .23** | .21* |
| Enthusiasm | .43** | .02 | .00 | .01 | .13 | .14 | .21* | .02 | .11 | .20* | .12 |
| **Agreeableness:** | | | | | | | | | | | |
| Compassion | .05 | .08 | -.08 | .13 | .20* | .02 | .16 | .00 | .14 | .10 | .01 |
| Teamwork | .13 | .18* | .07 | .01 | .19* | .17 | .27** | .16 | .14 | .21* | .01 |
| **Neuroticism:** | | | | | | | | | | | |
| Volatility | .12 | .26** | -.11 | -.14 | -.01 | .01 | .46** | .10 | -.07 | .17 | .02 |
| Withdrawal | .29** | .14 | -.11 | -.08 | .19* | .23* | .27** | .02 | .20* | .25** | .02 |
| **Conscientiousness:** | | | | | | | | | | | |
| Industriousness | .60** | -.08 | .08 | .03 | .05 | .10 | .09 | .00 | .07 | .17 | .00 |
| Orderly | .46** | -.16 | .03 | .02 | .07 | .10 | .07 | -.08 | .08 | .10 | -.15 |
| **Derailing Leadership** | .06 | .12 | .13 | .04 | .19* | .11 | .13 | .00 | .10 | .06 | .07 |

* $p < 0.05$
** $p < 0.01$

**Table 28. Middle Level Personality Correlations with Performance (N = 420)**

| | Motivation | Thinking | Management | Communication | Interpersonal | Leadership | Self-Management | Overall Management Performance | Overall Leadership Performance | Overall Performance | Salary (N=482) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Openness:** | | | | | | | | | | | |
| Intellect | .27** | .14** | .14** | -.05 | -.02 | .11* | .16** | .18** | .01 | .19** | -.02 |
| **Extraversion:** | | | | | | | | | | | |
| Assertive | .45** | -.01 | .13** | .07 | .05 | .14** | .22** | .08 | .04 | .23** | .03 |
| Enthusiasm | .41** | -.05 | .03 | .02 | .12* | .19** | .32** | -.01 | .14** | .28** | .00 |
| **Agreeableness:** | | | | | | | | | | | |
| Compassion | .22** | -.08 | -.03 | .03 | .09 | .13 | .08 | -.07 | .11* | .11* | -.05 |
| Teamwork | .15** | -.01 | .10* | .05 | .12* | .15* | .15** | .05 | .14** | .18** | .02 |
| **Neuroticism:** | | | | | | | | | | | |
| Volatility | .17** | .04 | .10* | .00 | .03 | .11* | .60** | .09 | .06 | .30** | .02 |
| Withdrawal | .20** | .05 | .03 | .01 | .10* | .08 | .24** | .01 | .07 | .16** | .05 |
| **Conscientiousness:** | | | | | | | | | | | |
| Industriousness | .43** | -.02 | .17** | -.04 | .00 | .05 | .19** | .09 | .00 | .21** | .00 |
| Orderly | .27** | -.13** | .08 | -.05 | .05 | -.02 | .06 | -.03 | -.01 | .07 | -.01 |
| **Derailing Leadership** | .07 | .02 | .00 | .09 | .13* | .12* | .13** | .01 | .15** | .14** | .10* |

* $p < 0.05$
** $p < 0.01$

**Table 29. Top Level Personality Correlations with Performance (N = 171)**

| | Motivation | Thinking | Management | Communication | Interpersonal | Leadership | Self-Management | Overall Management Performance | Overall Leadership Performance | Overall Performance | Salary(N=217) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Openness:** | | | | | | | | | | | |
| Intellect | .26** | .20** | .11 | .06 | .07 | .09 | .14 | .19* | .09 | .22** | .01 |
| **Extraversion:** | | | | | | | | | | | |
| Assertive | .35** | .09 | .07 | -.09 | .06 | .16* | .18* | .10 | .04 | .20** | .15* |
| Enthusiasm | .29** | .10 | .06 | .04 | .18* | .30** | .43** | .10 | .20** | .34** | .01 |
| **Agreeableness:** | | | | | | | | | | | |
| Compassion | .18* | .04 | .03 | .04 | .19* | .19* | .24** | .04 | .17* | .22** | -.05 |
| Teamwork | .24** | -.07 | .16* | .17* | .22** | .19* | .21** | .07 | .24** | .27** | .05 |
| **Neuroticism:** | | | | | | | | | | | |
| Volatility | .03 | .17* | .08 | .11 | .06 | .13 | .51** | .15 | .13 | .28** | .02 |
| Withdrawal | .17* | .06 | .20** | .00 | .08 | .10 | .28** | .17* | .07 | .22** | .05 |
| **Conscientious-ness:** | | | | | | | | | | | |
| Industriousness | .46** | .10 | .24** | -.08 | -.04 | .08 | .17* | .22** | -.03 | .22** | .02 |
| Orderly | .23** | -.06 | .30** | -.05 | -.06 | .09 | .06 | .17* | -.02 | .13 | -.05 |
| **Derailing Leadership** | .11 | .07 | .11 | .07 | .21** | .12 | .19* | .11 | .17* | .21** | .04 |

* $p < 0.05$
** $p < 0.01$

**Table 30. Bottom Level Cognitive Ability Correlations with Performance**

| | Motivation | Thinking | Management | Communication | Interpersonal | Leadership | Self-Management | Overall Management Performance | Overall Leadership Performance | Overall Performance | Salary |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Wesman N = 477 | .07 | .62** | .19** | .13** | .03 | .14** | .18** | .49** | .13** | .32** | .09* (N=638) |
| EAS Vocabulary N = 278 | .04 | .48** | .13* | .20** | .07 | .06 | .12* | .37** | .13* | .25** | .18** (N=367) |
| EAS Spatial N = 277 | .00 | .36** | .10 | .02 | -.02 | .07 | .02 | .29** | .03 | .13* | .01 (N=367) |
| EAS Numerical N = 286 | .06 | .51** | .12* | .10 | -.03 | .05 | .08 | .39** | .05 | .21** | .12* (N=379) |
| EAS Verbal N = 278 | .18** | .64** | .31** | .28** | .16** | .12 | .16** | .57** | .22** | .42** | .12* (N=367) |
| EAS Total N = 277 | .10 | .69** | .23** | .22** | .07 | .11 | .14* | .56** | .16** | .36** | .15** (N=367) |
| Watson-Glaser N = 500 | .11* | .62** | .17** | .10* | .07 | .16** | .19** | .48** | .13** | .33** | .13** (N=588) |

* $p < 0.05$
** $p < 0.01$

**Table 31. Middle Level Cognitive Ability Correlations with Performance**

| | Motivation | Thinking | Management | Communication | Interpersonal | Leadership | Self-Management | Overall Management Performance | Overall Leadership Performance | Overall Performance | Salary |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Wesman N = 952 | .02 | .61** | .17** | .14** | .09** | .12** | .12** | .47** | .15** | .29** | .03 (N=1234) |
| EAS Vocabulary N = 404 | .09 | .50** | .14** | .12* | .05 | .10* | .12* | .40** | .11* | .25** | .10* (N=540) |
| EAS Spatial N = 404 | .07 | .29** | .05 | .02 | .01 | .02 | .11* | .21** | .02 | .13* | .06 (N=540) |
| EAS Numerical N = 428 | .07 | .45** | .12* | .09 | .03 | .06 | .06 | .35** | .07 | .20** | .10* (N=567) |
| EAS Verbal N = 406 | .11* | .53** | .21** | .17** | .05 | .13* | .07 | .46** | .14** | .29** | .04 (N=543) |
| EAS Total N = 402 | .11* | .64** | .17** | .15** | .05 | .10* | .13** | .51** | .12* | .31** | .09* (N=539) |
| Watson-Glaser N = 1012 | .05 | .58** | .16** | .13** | .03 | .08** | .14** | .45** | .10** | .27** | .09** (N=1386) |

* $p < 0.05$
** $p < 0.01$

**Table 32. Top Level Cognitive Ability Correlations with Performance**

| | Motivation | Thinking | Management | Communication | Interpersonal | Leadership | Self-Management | Overall Management Performance | Overall Leadership Performance | Overall Performance | Salary |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Wesman N = 362 | .06 | .58** | .17** | .18** | .10 | .05 | .15** | .44** | .13* | .28** | -.03 (N=524) |
| EAS Vocabulary N = 155 | -.05 | .51** | .21* | .19* | .01 | -.06 | .11 | .43** | .05 | .21* | .20** (N=185) |
| EAS Spatial N = 150 | .02 | .25** | .03 | .01 | -.07 | .01 | -.08 | .17* | -.02 | .04 | -.21** (N=184) |
| EAS Numerical N = 170 | .09 | .46** | .14 | .14 | -.08 | .04 | .02 | .37** | .05 | .19* | .06 (N=204) |
| EAS Verbal N = 155 | .00 | .59** | .18* | .23** | .13 | .05 | .15 | .46** | .17* | .30** | -.03 (N=185) |
| EAS Total N = 149 | -.03 | .64** | .19* | .18* | -.01 | .00 | .06 | .50** | .07 | .23** | .03 (N=184) |
| Watson-Glaser N = 384 | .08 | .59** | .16** | .15** | .03 | .07 | .13** | .44** | .10 | .26** | .08 (N=558) |

* $p < 0.05$
** $p < 0.01$

**Table 33. Bottom Level Experience Correlations with Performance (N = 99)**

| | Motivation | Thinking | Management | Communication | Interpersonal | Leadership | Self-Management | Overall Management Performance | Overall Leadership Performance | Overall Performance | Salary |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **General Management:** | .10 | -.13 | .01 | -.15 | -.08 | -.08 | -.01 | -.07 | -.13 | -.08 | .30** |
| Strategy Development | .12 | -.13 | .04 | -.10 | -.02 | -.01 | -.03 | -.05 | -.06 | -.03 | .32** |
| Project Management & Implementation | .03 | -.07 | -.02 | -.20* | -.11 | -.13 | -.02 | -.05 | -.19 | -.13 | .23* |
| Business Development & Marketing | .18 | -.14 | -.01 | -.11 | -.07 | -.06 | .11 | -.09 | -.10 | -.02 | .36** |
| Business Growth | .19 | -.14 | -.01 | -.11 | -.06 | -.04 | .06 | -.09 | -.09 | -.02 | .40** |
| Product Development | .10 | -.04 | .02 | -.14 | -.10 | -.06 | .05 | -.01 | -.13 | -.04 | .20* |
| Start-Up Business | .05 | -.05 | .06 | -.01 | .01 | .05 | .03 | .01 | .02 | .03 | .28** |
| Financial Management | .03 | -.15 | -.02 | -.16 | -.10 | -.10 | -.05 | -.10 | -.15 | -.13 | .22* |
| Operations | .08 | -.16 | .05 | -.19 | -.14 | -.10 | -.07 | -.06 | -.18 | -.13 | .20* |
| Support Functions | .01 | -.13 | .09 | -.09 | -.05 | -.06 | -.13 | -.02 | -.08 | -.09 | .14 |
| External Relations | .08 | -.10 | .00 | -.07 | -.01 | -.07 | -.02 | -.06 | -.06 | -.04 | .30** |
| **Overcoming Challenge & Adversity:** | .05 | -.04 | .02 | -.07 | -.03 | -.01 | -.05 | -.01 | -.05 | -.03 | .21* |
| Inherited Problems & Challenges | .06 | -.03 | .06 | -.08 | -.03 | .05 | -.10 | .03 | -.03 | -.02 | .17 |
| Interpersonally Challenging Situations | .02 | -.06 | -.01 | -.06 | -.03 | -.03 | -.04 | -.05 | -.05 | -.05 | .22* |
| Downturns and/or Failures | .13 | .00 | .11 | -.03 | .04 | .03 | .02 | .07 | .01 | .08 | .15 |
| Difficult Financial Situations | .03 | -.05 | -.01 | -.12 | -.05 | -.07 | -.03 | -.03 | -.10 | -.07 | .18 |
| Difficult Staffing Situations | .09 | -.01 | .04 | -.04 | -.02 | .03 | -.07 | .02 | -.02 | .01 | .18 |

* $p < 0.05$
** $p < 0.01$

Table 33 (continued)

| | Motivation | Thinking | Management | Communication | Interpersonal | Leadership | Self-Management | Overall Management Performance | Overall Leadership Performance | Overall Performance | Salary |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Risky and/or Critical:** | .09 | -.06 | .04 | -.09 | -.02 | -.03 | -.03 | -.01 | -.06 | -.02 | .26** |
| High Risk Situations | .12 | -.07 | .02 | -.10 | -.05 | -.04 | -.02 | -.03 | -.09 | -.03 | .26* |
| Critical Negotiations | .08 | -.04 | .02 | -.07 | .00 | -.03 | -.01 | -.02 | -.04 | -.01 | .28** |
| Crisis Management | .05 | -.02 | .03 | -.07 | -.04 | -.03 | -.04 | .01 | -.06 | -.03 | .16 |
| Highly Critical/Visible Assignments or Initiatives | .08 | -.08 | .06 | -.09 | -.02 | -.02 | -.05 | -.01 | -.06 | -.03 | .26** |
| **Personal & Career Related:** | .00 | -.03 | -.05 | -.02 | -.02 | -.06 | .11 | -.05 | -.04 | -.01 | .19 |
| Self-Development | .04 | .06 | -.01 | .00 | -.02 | .00 | .15 | .03 | -.01 | .06 | .18 |
| Development of Others | .12 | .04 | .04 | -.02 | .02 | -.03 | .04 | .05 | -.01 | .06 | .25* |
| International/Cross-Cultural | -.08 | -.13 | -.12 | .00 | -.06 | -.07 | .19 | -.16 | -.04 | -.06 | .09 |
| Extracurricular Activities | -.09 | -.04 | -.04 | -.05 | .02 | -.11 | -.12 | -.05 | -.05 | -.10 | .05 |
| **Overall Experience:** | .08 | -.09 | .02 | -.11 | -.05 | -.05 | -.01 | -.04 | -.09 | -.05 | .28** |

* $p < 0.05$
** $p < 0.01$

**Table 34. Middle Level Experience Correlations with Performance (N = 186)**

| | Motivation | Thinking | Management | Communication | Interpersonal | Leadership | Self-Management | Overall Management Performance | Overall Leadership Performance | Overall Performance | Salary N=219 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **General Management:** | .18* | -.06 | .08 | .00 | .14 | .14 | .08 | .02 | .11 | .13 | .24** |
| Strategy Development | .17* | -.07 | .11 | .01 | .19** | .15* | .06 | .03 | .15* | .14 | .28** |
| Project Management & Implementation | .07 | -.03 | .01 | -.07 | .02 | .06 | .04 | -.01 | .00 | .02 | .17* |
| Business Development & Marketing | .22** | -.09 | .11 | .02 | .15* | .10 | .10 | .02 | .11 | .14 | .23** |
| Business Growth | .20** | -.10 | .10 | .01 | .15* | .12 | .08 | .01 | .12 | .13 | .24** |
| Product Development | .02 | -.07 | -.04 | -.06 | .03 | -.01 | .04 | -.06 | -.02 | -.02 | .14* |
| Start-Up Business | .21** | -.02 | .09 | .04 | .12 | .09 | .04 | .04 | .10 | .13 | .15* |
| Financial Management | .22** | -.04 | .09 | .05 | .17* | .22** | .12 | .04 | .18* | .19** | .18** |
| Operations | .17* | -.05 | .06 | .01 | .09 | .14 | .11 | .01 | .10 | .12 | .17* |
| Support Functions | .14 | -.06 | .09 | .03 | .14 | .17* | .09 | .03 | .14 | .14 | .19** |
| External Relations | .14 | -.03 | .08 | -.02 | .15* | .09 | .04 | .04 | .09 | .10 | .21** |
| **Overcoming Challenge & Adversity:** | .22** | .01 | .15* | .03 | .13 | .22** | .10 | .10 | .16* | .20** | .23** |
| Inherited Problems & Challenges | .26** | -.01 | .16* | .05 | .15* | .20** | .07 | .09 | .16* | .20** | .20** |
| Interpersonally Challenging Situations | .20** | .05 | .14 | .02 | .13 | .24** | .11 | .11 | .16* | .20** | .24** |
| Downturns and/or Failures | .15* | -.02 | .13 | -.01 | .05 | .12 | .06 | .07 | .07 | .11 | .17* |
| Difficult Financial Situations | .16* | -.03 | .09 | .00 | .10 | .18* | .06 | .04 | .11 | .12 | .17* |
| Difficult Staffing Situations | .23** | .01 | .17* | .10 | .17* | .24** | .11 | .11 | .21** | .23** | .24** |

* $p < 0.05$
** $p < 0.01$

Table 34 (continued)

| | Motivation | Thinking | Management | Communication | Interpersonal | Leadership | Self-Management | Overall Management Performance | Overall Leadership Performance | Overall Performance | Salary N=219 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Risky and/or Critical:** | .13 | -.05 | .05 | -.07 | .10 | .13 | .05 | .01 | .07 | .08 | .20** |
| High Risk Situations | .12 | -.05 | .04 | -.04 | .12 | .14 | .07 | .00 | .09 | .09 | .18** |
| Critical Negotiations | .11 | -.08 | .02 | -.12 | .05 | .06 | .03 | -.03 | -.01 | .02 | .18** |
| Crisis Management | .16* | -.03 | .07 | -.03 | .11 | .19** | .06 | .03 | .11 | .12 | .15* |
| Highly Critical/Visible Assignments or Initiatives | .14 | .08 | .08 | -.04 | .13 | .15* | .05 | .03 | .13 | .10 | .23** |
| **Personal & Career Related:** | .12 | -.04 | .16* | .03 | .11 | .17* | .06 | .14 | .09 | .17* | .26** |
| Self-Development | .09 | -.04 | .11 | .04 | .05 | .06 | .03 | .04 | .06 | .08 | .16* |
| Development of Others | .14 | -.01 | .12 | .15* | .20** | .26** | .07 | .07 | .25** | .21** | .26** |
| International/Cross-Cultural | .05 | .17* | .02 | -.12 | -.02 | .07 | .09 | .11 | -.03 | .06 | .18** |
| Extracurricular Activities | .07 | .06 | .24** | .07 | .13 | .11 | -.06 | .19* | .13 | .14 | .13 |
| **Overall Experience:** | .18* | -.03 | .11 | -.01 | .14 | .17* | .08 | .05 | .12 | .15* | .25** |

* $p < 0.05$
** $p < 0.01$

**Table 35. Top Level Experience Correlations with Performance (N = 83)**

| | Motivation | Thinking | Management | Communication | Interpersonal | Leadership | Self-Management | Overall Management Performance | Overall Leadership Performance | Overall Performance | Salary N=109 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **General Management:** | .08 | -.09 | -.23 | -.15 | -.03 | .03 | .02 | -.18 | -.07 | -.08 | .20* |
| Strategy Development | .05 | -.03 | -.15 | -.10 | -.01 | .04 | .03 | -.11 | -.03 | -.03 | .24* |
| Project Management & Implementation | .12 | -.05 | -.18 | -.17 | -.08 | .02 | .01 | -.13 | -.10 | -.07 | .15 |
| Business Development & Marketing | .09 | -.10 | -.26* | -.03 | .05 | .05 | .01 | -.21 | .03 | -.03 | .24* |
| Business Growth | .07 | -.09 | -.23* | -.04 | .02 | .06 | .02 | -.18 | .01 | -.03 | .26** |
| Product Development | .14 | .02 | -.17 | -.08 | .03 | .08 | .02 | -.09 | .01 | .00 | .19 |
| Start-Up Business | .10 | -.04 | -.18 | -.09 | .01 | .04 | .07 | -.13 | -.03 | -.02 | .20* |
| Financial Management | -.05 | -.18 | -.22* | -.20 | -.08 | .04 | -.04 | -.23* | -.10 | -.15 | .19* |
| Operations | .04 | -.17 | -.21 | -.31** | -.19 | -.05 | -.02 | -.21 | -.23* | -.19 | .11 |
| Support Functions | -.08 | -.19 | -.24* | -.30** | -.24* | -.13 | -.04 | -.25* | -.27* | -.25* | .03 |
| External Relations | .14 | .02 | -.14 | -.02 | .12 | .09 | .06 | -.07 | .07 | .05 | .10 |
| **Overcoming Challenge & Adversity:** | .03 | -.11 | -.12 | -.15 | .03 | .13 | .10 | -.13 | -.01 | -.02 | .13 |
| Inherited Problems & Challenges | .08 | -.03 | -.02 | -.08 | .10 | .22* | .14 | -.03 | .08 | .08 | .14 |
| Interpersonally Challenging Situations | .06 | -.09 | -.08 | -.12 | .05 | .14 | .14 | -.09 | .02 | .02 | .09 |
| Downturns and/or Failures | -.02 | -.11 | -.16 | -.18 | .01 | .07 | .06 | -.16 | -.05 | -.07 | .11 |
| Difficult Financial Situations | -.05 | -.11 | -.17 | -.19 | -.07 | .07 | -.01 | -.15 | -.09 | -.11 | .14 |
| Difficult Staffing Situations | .07 | -.16 | -.12 | -.16 | .03 | .09 | .09 | -.15 | -.03 | -.03 | .15 |

* $p < 0.05$
** $p < 0.01$

Table 35 (continued)

| | Motivation | Thinking | Management | Communication | Interpersonal | Leadership | Self-Management | Overall Management Performance | Overall Leadership Performance | Overall Performance | Salary N=109 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Risky and/or Critical:** | .09 | -.05 | -.16 | -.12 | .03 | .06 | .07 | -.12 | -.02 | -.02 | .12 |
| High Risk Situations | .09 | -.08 | -.21 | -.15 | .00 | .04 | .03 | -.17 | -.05 | -.06 | .13 |
| Critical Negotiations | .08 | -.04 | -.14 | -.09 | .06 | .06 | .10 | -.11 | .00 | .00 | .10 |
| Crisis Management | .09 | -.12 | -.12 | -.18 | .00 | .09 | .07 | -.14 | -.05 | -.04 | .06 |
| Highly Critical/Visible Assignments or Initiatives | .09 | -.01 | -.15 | -.11 | .02 | .07 | .07 | -.09 | -.02 | -.01 | .13 |
| **Personal & Career Related:** | .04 | .05 | -.03 | .04 | .12 | .12 | .10 | .01 | .11 | .09 | .01 |
| Self-Development | -.03 | .05 | -.01 | .09 | .11 | -.02 | .06 | .02 | .08 | .05 | -.10 |
| Development of Others | .13 | -.02 | -.04 | -.04 | .13 | .16 | .06 | -.03 | .09 | .08 | .12 |
| International/Cross-Cultural | -.05 | .01 | -.03 | -.02 | -.03 | .09 | .09 | -.01 | .01 | .01 | .01 |
| Extracurricular Activities | .11 | .12 | -.01 | .11 | .21 | .12 | .06 | .06 | .17 | .14 | .01 |
| **Overall Experience:** | .07 | -.08 | -.18 | -.14 | .01 | .08 | .06 | -.15 | -.03 | -.04 | .15 |

* $p < 0.05$
** $p < 0.01$

**Table 36. Bottom Level PROFILOR Competency Correlations with Performance (N = 523)**

| | Motivation | Thinking | Management | Communication | Interpersonal | Leadership | Self-Management | Overall Management Performance | Overall Leadership Performance | Overall Performance | Salary N=744 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Thinking | .08 | .15** | .12** | .19** | .10* | .18** | .17** | .16** | .19** | .22** | .12** |
| Administration | .11** | .04 | .12** | .22** | .18** | .22** | .14** | .09* | .26** | .23** | .08* |
| Leadership | .11* | .00 | .08 | .25** | .23** | .26** | .19** | .05 | .30** | .25** | .07* |
| Interpersonal | .01 | .00 | .03 | .23** | .21** | .17** | .22** | .02 | .25** | .19** | .04 |
| Communication | .09* | .06 | .09* | .30** | .23** | .24** | .23** | .09* | .32** | .28** | .06 |
| 360 Motivation | .20** | .03 | .11* | .17** | .14** | .16** | .13** | .08 | .19** | .21** | .11** |
| 360 Self-Management | .08 | .02 | .08 | .21** | .19** | .16** | .19** | .06 | .23** | .21** | .07 |
| Organizational Knowledge | .09* | .09* | .06 | .12** | .04 | .12** | .12** | .09* | .11** | .14** | .16** |
| Empowerment | .07 | -.02 | .06 | .24** | .25** | .23** | .20** | .02 | .30** | .23** | .04 |
| Career Issues | .06 | .02 | .07 | .20** | .18** | .17** | .19** | .05 | .23** | .20** | .06 |
| Overall 360 Performance | .13** | .03 | .11* | .16** | .13** | .15** | .10* | .08 | .18** | .18** | .05 |

* $p < 0.05$
** $p < 0.01$

**Table 37. Middle Level PROFILOR Competency Correlations with Performance (N = 1104)**

| | Motivation | Thinking | Management | Communication | Interpersonal | Leadership | Self-Management | Overall Management Performance | Overall Leadership Performance | Overall Performance | Salary N=1386 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Thinking | .05 | .13** | .07* | .04 | .04 | .09** | .10** | .12** | .07* | .12** | .20** |
| Administration | .04 | .01 | .08* | .03 | .06 | .10** | .10** | .05 | .08* | .09** | .15** |
| Leadership | .06* | -.02 | .02 | .05 | .13** | .15** | .14** | .00 | .13** | .12** | .15** |
| Interpersonal | -.02 | -.01 | -.02 | .11** | .21** | .13** | .17** | -.02 | .19** | .13** | .10** |
| Communication | .04 | .01 | .02 | .16** | .19** | .15** | .15** | .02 | .21** | .16** | .12** |
| 360 Motivation | .17** | .01 | .07* | .00 | .04 | .11** | .08** | .05 | .06* | .11** | .15** |
| 360 Self-Management | .02 | .01 | .00 | .07* | .14** | .13** | .15** | .01 | .14** | .12** | .14** |
| Organizational Knowledge | .07* | .09** | .04 | -.02 | -.02 | .04 | .07* | .08** | .00 | .06* | .21** |
| Empowerment | .02 | -.03 | .01 | .07* | .15** | .14** | .15** | -.01 | .15** | .11** | .13** |
| Career Issues | .01 | .01 | .01 | .07* | .16** | .13** | .14** | .01 | .15** | .12** | .14** |
| Overall 360 Performance | .10** | .03 | .09** | .03 | .04 | .10** | .07* | .08* | .07* | .11** | .14** |

* $p < 0.05$
** $p < 0.01$

**Table 38. Top Level PROFILOR Competency Correlations with Performance (N = 445)**

| | Motivation | Thinking | Management | Communication | Interpersonal | Leadership | Self-Management | Overall Management Performance | Overall Leadership Performance | Overall Performance | Salary N=580 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Thinking | .08 | .15** | .13** | .07 | .05 | .12* | .18** | .16** | .10* | .17** | .07 |
| Administration | .07 | .05 | .16** | .08 | .11* | .16** | .15** | .12* | .14** | .17** | .03 |
| Leadership | .09 | .05 | .10* | .10* | .14** | .17** | .17** | .06 | .17** | .17** | .04 |
| Interpersonal | -.01 | .01 | .06 | .17** | .23** | .16** | .23** | .04 | .23** | .19** | -.04 |
| Communication | .06 | .10* | .13** | .25** | .25** | .20** | .21** | .13** | .28** | .26** | -.03 |
| 360 Motivation | .17** | -.03 | .08 | -.05 | -.01 | .05 | .06 | .03 | .00 | .06 | .12** |
| 360 Self-Management | .03 | .05 | .07 | .12* | .15** | .11* | .21** | .07 | .16** | .16** | .04 |
| Organizational Knowledge | .09* | .07 | .05 | .00 | .03 | .03 | .12* | .07 | .03 | .08 | .07 |
| Empowerment | .06 | .00 | .08 | .12** | .17** | .18** | .17** | .05 | .19** | .17** | .01 |
| Career Issues | .01 | .00 | .07 | .11* | .14** | .13** | .19** | .04 | .16** | .14** | .03 |
| Overall 360 Performance | .10* | -.01 | .09 | .02 | .03 | .09 | .10* | .04 | .06 | .09 | .11* |

* $p < 0.05$
** $p < 0.01$

**Table 39. Bottom Level Campbell Competency Correlations with Performance (N = 523)**

| | Motivation | Thinking | Management | Communication | Interpersonal | Leadership | Self-Management | Overall Management Performance | Overall Leadership Performance | Overall Performance | Salary N=744 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **General Job Performance:** | | | | | | | | | | | |
| Technical Performance | .09* | .08 | .04 | .04 | .01 | .05 | .04 | .07 | .04 | .07 | .08* |
| Communication | .11* | .12** | .09* | .32** | .21** | .28** | .24** | .12** | .33** | .31** | .10** |
| Initiative, Persistence, & Effort | .20** | .03 | .11* | .19** | .16** | .17** | .15** | .08 | .21** | .22** | .09* |
| **Overall Leadership:** | .09* | .00 | .08 | .25** | .24** | .24** | .20** | .05 | .30** | .25** | .07 |
| Consideration, Support, Person-Centered | .04 | -.01 | .03 | .24** | .26** | .19** | .23** | .01 | .28** | .22** | .03 |
| Initiating Structure, Guiding, Directing | .07 | -.01 | .09* | .21** | .19** | .20** | .15** | .05 | .24** | .20** | .04 |
| Goal Emphasis | .15** | .02 | .09* | .22** | .19** | .24** | .19** | .07 | .27** | .25** | .11** |
| Empowerment, Facilitation | .05 | .00 | .06 | .23** | .25** | .24** | .20** | .04 | .30** | .23** | .06 |
| Training, Coaching | .11* | -.01 | .09* | .26** | .25** | .28** | .18** | .05 | .32** | .26** | .08* |
| Serving as a Model | .08 | .02 | .07 | .23** | .21** | .20** | .21** | .05 | .26** | .23** | .06 |

* $p < 0.05$
** $p < 0.01$

Table 39 (continued)

| | **Motivation** | **Thinking** | **Management** | **Communication** | **Interpersonal** | **Leadership** | **Self-Management** | **Overall Management Performance** | **Overall Leadership Performance** | **Overall Performance** | **Salary** N=744 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Overall Management:** | .10* | .02 | .11* | .21** | .16** | .20** | .16** | .08 | .23** | .21** | .10** |
| Decision Making, Problem Solving, Strategic Innovation | .11** | .12** | .12** | .19** | .10* | .19** | .18** | .15** | .20** | .23** | .15** |
| Goal Setting, Planning, Organizing, Budgeting | .15** | .03 | .16** | .20** | .16** | .22** | .12** | .11* | .24** | .23** | .08* |
| Coordination | .05 | .00 | .05 | .24** | .20** | .20** | .19** | .04 | .26** | .21** | .08* |
| Monitoring Unit Effectiveness | .12** | -.09* | .10* | .14** | .09* | .16** | .06 | .00 | .17** | .13** | .03 |
| External Representation | .03 | .03 | .02 | .14** | .11* | .12** | .12** | .03 | .15** | .13** | .09* |
| Administration | .11* | .00 | .13** | .21** | .18** | .19** | .13** | .08 | .24** | .21** | .18** |
| Commitment, Compliance | .07 | .02 | .10* | .17** | .14** | .13** | .16** | .07 | .18** | .18** | .11** |

* $p < 0.05$
** $p < 0.01$

**Table 40. Middle Level Campbell Competency Correlations with Performance (N = 1104)**

| | Motivation | Thinking | Management | Communication | Interpersonal | Leadership | Self-Management | Overall Management Performance | Overall Leadership Performance | Overall Performance | Salary N=1386 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **General Job Performance:** | | | | | | | | | | | |
| Technical Performance | .05 | .09** | .04 | -.03 | -.05 | -.01 | .04 | .08** | -.03 | .03 | .13** |
| Communication | .11** | .05 | .05 | .16** | .14** | .16** | .13** | .06* | .19** | .18** | .13** |
| Initiative, Persistence, & Effort | .17** | .03 | .06* | .02 | .07* | .12** | .10** | .05 | .09** | .13** | .12** |
| **Overall Leadership:** | .04 | -.02 | .02 | .07* | .14** | .14** | .15** | .00 | .15** | .12** | .14** |
| Consideration, Support, Person-Centered | -.01 | -.03 | -.03 | .10** | .21** | .15** | .16** | -.03 | .19** | .13** | .09** |
| Initiating Structure, Guiding, Directing | .03 | -.04 | .05 | .04 | .07* | .11** | .09** | .00 | .09** | .08* | .13** |
| Goal Emphasis | .10** | -.03 | .04 | .02 | .08** | .12** | .12** | .01 | .09** | .10** | .19** |
| Empowerment, Facilitation | .01 | -.01 | .02 | .07* | .15** | .13** | .15** | .01 | .15** | .12** | .12** |
| Training, Coaching | .06 | -.03 | .04 | .07* | .13** | .15** | .13** | .01 | .14** | .12** | .14** |
| Serving as a Model | .04 | .00 | .00 | .07* | .15** | .14** | .16** | .00 | .15** | .13** | .14** |

* $p < 0.05$
** $p < 0.01$

Table 40 (continued)

| | **Motivation** | **Thinking** | **Management** | **Communication** | **Interpersonal** | **Leadership** | **Self-Management** | **Overall Management Performance** | **Overall Leadership Performance** | **Overall Performance** | **Salary** N=1386 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Overall Management:** | .04 | .00 | .04 | .04 | .09** | .11** | .10** | .03 | .10** | .10** | .18** |
| Decision Making, Problem Solving, Strategic Innovation | .08** | .12** | .07* | .02 | .04 | .09** | .11** | .11** | .06* | .12** | .21** |
| Goal Setting, Planning, Organizing, Budgeting | .07* | .02 | .09** | .00 | .03 | .09** | .08** | .06* | .05 | .09** | .16** |
| Coordination | .01 | -.01 | .01 | .08* | .15** | .13** | .14** | .00 | .15** | .12** | .13** |
| Monitoring Unit Effectiveness | .08** | -.12** | .03 | -.02 | .01 | .05 | .03 | -.06 | .02 | .01 | .14** |
| External Representation | .02 | .05 | .00 | .06 | .12** | .11** | .13** | .03 | .12** | .11** | .14** |
| Administration | .02 | -.02 | .06 | .06* | .09** | .11** | .09** | .03 | .11** | .09** | .15** |
| Commitment, Compliance | -.02 | .00 | .02 | .05 | .07* | .08* | .07* | .01 | .08** | .06* | .20** |

* $p < 0.05$
** $p < 0.01$

**Table 41. Top Level Campbell Competency Correlations with Performance (N = 445)**

| | Motivation | Thinking | Management | Communication | Interpersonal | Leadership | Self-Management | Overall Management Performance | Overall Leadership Performance | Overall Performance | Salary N=580 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **General Job Performance:** | | | | | | | | | | | |
| Technical Performance | .08 | .07 | .03 | -.03 | -.01 | -.03 | .06 | .06 | -.03 | .04 | .01 |
| Communication | .12** | .16** | .16** | .22** | .20** | .19** | .17** | .19** | .25** | .27** | .01 |
| Initiative, Persistence, & Effort | .17** | .00 | .10* | .02 | .06 | .08 | .11* | .06 | .06 | .11* | .08 |
| **Overall Leadership:** | .06 | .01 | .10* | .12* | .16** | .17** | .18** | .07 | .18** | .17** | .02 |
| Consideration, Support, Person-Centered | .01 | -.02 | .04 | .15** | .22** | .16** | .20** | .01 | .22** | .17** | -.03 |
| Initiating Structure, Guiding, Directing | .05 | .00 | .14** | .09* | .11* | .15** | .13** | .09 | .14** | .15** | .01 |
| Goal Emphasis | .10* | .00 | .07 | .02 | .07 | .13** | .11* | .04 | .09 | .11* | .11** |
| Empowerment, Facilitation | .04 | .03 | .10* | .15** | .18** | .20** | .21** | .08 | .21** | .20** | -.01 |
| Training, Coaching | .10* | .01 | .11* | .11* | .16** | .18** | .15** | .07 | .18** | .18** | .04 |
| Serving as a Model | .05 | .04 | .09 | .13** | .15** | .14** | .20** | .08 | .17** | .17** | .03 |

* $p < 0.05$
** $p < 0.01$

Table 41 (continued)

| | **Motivation** | **Thinking** | **Management** | **Communication** | **Interpersonal** | **Leadership** | **Self-Management** | **Overall Management Performance** | **Overall Leadership Performance** | **Overall Performance** | **Salary** N=580 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Overall Management:** | .08 | .02 | .12** | .08 | .12** | .15** | .18** | .08 | .14** | .16** | .06 |
| Decision Making, Problem Solving, Strategic Innovation | .11* | .12* | .10* | .06 | .06 | .11* | .17** | .13** | .09 | .15** | .07 |
| Goal Setting, Planning, Organizing, Budgeting | .10* | .05 | .16** | .05 | .08 | .14** | .13** | .12** | .11* | .15** | .06 |
| Coordination | .03 | .04 | .11* | .15** | .19** | .16** | .23** | .09 | .20** | .20** | -.01 |
| Monitoring Unit Effectiveness | .09 | -.12** | .11* | -.04 | .03 | .14** | .05 | .00 | .06 | .06 | .11* |
| External Representation | .02 | .03 | .04 | .07 | .11* | .09 | .18** | .04 | .11* | .12* | .06 |
| Administration | .08 | .02 | .16** | .12* | .17** | .15** | .15** | .11* | .18** | .18** | -.02 |
| Commitment, Compliance | .06 | .03 | .07 | .09 | .12* | .12* | .19** | .06 | .14** | .15** | .09* |

* $p < 0.05$
** $p < 0.01$

**Table 42. Euclidean Distance between Predictor-Performance Correlation Profiles**

| | Overall Management | | | Overall Leadership | | | Overall Performance | | | Annual Salary | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **B-M** | **M-T** | **B-T** | **B-M** | **M-T** | **B-T** | **B-M** | **M-T** | **B-T** | **B-M** | **M-T** | **B-T** |
| **Personality** | .19 | .35 | .41 | .23 | .17 | .33 | .20 | .20 | .28 | .35 | .15 | .26 |
| **Cognitive Ability** | .16 | .06 | .20 | .10 | .10 | .14 | .15 | .13 | .22 | .16 | .31 | .33 |
| **Experiences** | .50 | .83 | .59 | .91 | .82 | .46 | .83 | .87 | .39 | .35 | .50 | .56 |
| General Management | .27 | .60 | .39 | .67 | .66 | .34 | .59 | .69 | .21 | .29 | .22 | .34 |
| Overcoming Challenge & Adversity | .21 | .46 | .32 | .43 | .37 | .14 | .44 | .45 | .20 | .07 | .20 | .15 |
| Risky/Critical | .05 | .28 | .24 | .31 | .26 | .07 | .23 | .25 | .04 | .13 | .16 | .28 |
| Personal & Career Related | .36 | .20 | .20 | .32 | .17 | .26 | .31 | .14 | .25 | .12 | .36 | .32 |
| **PROFILOR Factors** | .13 | .19 | .09 | .41 | .14 | .35 | .34 | .18 | .24 | .24 | .38 | .19 |
| **Campbell Factors** | .18 | .26 | .12 | .54 | .18 | .41 | .44 | .24 | .26 | .27 | .45 | .30 |
| Leadership Factors | .11 | .16 | .07 | .36 | .09 | .29 | .29 | .13 | .19 | .18 | .27 | .11 |
| Management Factors | .12 | .16 | .06 | .34 | .13 | .23 | .29 | .17 | .14 | .19 | .31 | .25 |

B-M refers to the distance between the Bottom and Middle Levels.
M-T refers to the distance between the Middle and Top Levels.
B-T refers to the distance between the Bottom and Top Levels.

**Table 43. Incremental Regression Results: Prediction of each Personality Factor beyond Cognitive Ability**

| Level | Predictor | Overall Performance | | | | Overall Leadership | | | | Overall Management | | | | Annual Salary | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | R | $R^2$ | Adj. $R^2$ | $\Delta R^2$ | R | $R^2$ | Adj. $R^2$ | $\Delta R^2$ | R | $R^2$ | Adj. $R^2$ | $\Delta R^2$ | R | $R^2$ | Adj. $R^2$ | $\Delta R^2$ |
| **Bottom** | Watson-Glaser | .32 | .10 | .09 | | .14 | .02 | .01 | | .48 | .23 | .22 | | .09 | .01 | .00 | |
| df = 123 | + Intellect | .37 | .14 | .12 | .04* | .14 | .02 | .00 | .00 | .51 | .26 | .25 | .03* | .21 | .04 | .03 | .03* |
| | + Assertiveness | .41 | .17 | .15 | .07** | .16 | .03 | .01 | .01 | .51 | .26 | .25 | .03* | .23 | .05 | .04 | .04* |
| | + Enthusiasm | .39 | .15 | .14 | .05** | .18 | .03 | .02 | .01 | .48 | .23 | .22 | .00 | .14 | .02 | .00 | .01 |
| | + Compassion | .34 | .12 | .10 | .02 | .20 | .04 | .02 | .02 | .48 | .23 | .22 | .00 | .10 | .01 | .00 | .00 |
| | + Teamwork | .39 | .15 | .14 | .05** | .20 | .04 | .02 | .02 | .51 | .26 | .25 | .03* | .09 | .01 | .00 | .00 |
| | + Volatility | .35 | .11 | .10 | .01 | .17 | .03 | .01 | .01 | .48 | .23 | .22 | .00 | .10 | .01 | .00 | .00 |
| | + Withdrawal | .40 | .16 | .14 | .06** | .24 | .06 | .04 | .04* | .48 | .23 | .22 | .00 | .11 | .01 | .00 | .00 |
| | + Industriousness | .40 | .16 | .15 | .06** | .16 | .03 | .01 | .01 | .49 | .24 | .22 | .01 | .10 | .01 | .00 | .00 |
| | + Orderliness | .38 | .14 | .13 | .04* | .18 | .03 | .02 | .01 | .48 | .23 | .22 | .00 | .14 | .02 | .00 | .01 |
| | + Derailing Leadership | .32 | .10 | .09 | .00 | .16 | .03 | .01 | .01 | .48 | .23 | .22 | .00 | .10 | .01 | .00 | .00 |

* significant at $p < 0.05$

** significant at $p < 0.01$

Adj. $R^2$ adjusts for sample size and the number of predictors $(1 - ((1 - R^2)(N - 1) / (N - k - 1)))$

Table 43 (continued)

| Level | Predictor | Overall Performance | | | | Overall Leadership | | | | Overall Management | | | | Annual Salary | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | R | $R^2$ | Adj. $R^2$ | $\Delta R^2$ | R | $R^2$ | Adj. $R^2$ | $\Delta R^2$ | R | $R^2$ | Adj. $R^2$ | $\Delta R^2$ | R | $R^2$ | Adj. $R^2$ | $\Delta R^2$ |
| **Middle** | Watson-Glaser | .23 | .05 | .05 | | .09 | .01 | .00 | | .44 | .20 | .19 | | .05 | .00 | .00 | |
| df = 413 | + Intellect | .29 | .09 | .08 | .04** | .09 | .01 | .00 | .00 | .47 | .22 | .22 | .02** | .05 | .00 | .00 | .00 |
| | + Assertiveness | .33 | .11 | .11 | .06** | .10 | .01 | .00 | .00 | .45 | .21 | .20 | .01* | .06 | .00 | .00 | .00 |
| | + Enthusiasm | .38 | .14 | .14 | .09** | .17 | .03 | .02 | .02** | .45 | .20 | .19 | .00 | .05 | .00 | .00 | .00 |
| | + Compassion | .28 | .08 | .07 | .03** | .15 | .02 | .02 | .01* | .44 | .20 | .19 | .00 | .06 | .00 | .00 | .00 |
| | + Teamwork | .31 | .10 | .09 | .05** | .17 | .03 | .02 | .02** | .45 | .21 | .20 | .01* | .06 | .00 | .00 | .00 |
| | + Volatility | .38 | .15 | .14 | .10** | .10 | .01 | .00 | .00 | .45 | .21 | .20 | .01* | .06 | .00 | .00 | .00 |
| | + Withdrawal | .30 | .09 | .09 | .04** | .12 | .01 | .00 | .00 | .45 | .20 | .19 | .00 | .07 | .00 | .00 | .00 |
| | + Industriousness | .32 | .10 | .10 | .05** | .09 | .01 | .00 | .00 | .46 | .21 | .20 | .01* | .05 | .00 | .00 | .00 |
| | + Orderliness | .26 | .07 | .06 | .02* | .09 | .01 | .00 | .00 | .45 | .20 | .20 | .00 | .05 | .00 | .00 | .00 |
| | + Derailing Leadership | .27 | .07 | .07 | .02** | .17 | .03 | .02 | .02** | .44 | .20 | .19 | .00 | .09 | .01 | .01 | .01 |

* significant at $p < 0.05$

** significant at $p < 0.01$

Adj. $R^2$ adjusts for sample size and the number of predictors $(1 - ((1 - R^2)(N - 1) / (N - k - 1)))$

Table 43 (continued)

| Level | Predictor | Overall Performance | | | | Overall Leadership | | | | Overall Management | | | | Annual Salary | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | R | $R^2$ | Adj. $R^2$ | $\Delta R^2$ | R | $R^2$ | Adj. $R^2$ | $\Delta R^2$ | R | $R^2$ | Adj. $R^2$ | $\Delta R^2$ | R | $R^2$ | Adj. $R^2$ | $\Delta R^2$ |
| **Top** | Watson-Glaser | .15 | .02 | .02 | | .04 | .00 | .00 | | .29 | .09 | .08 | | .01 | .00 | .00 | |
| df=154 | + Intellect | .24 | .06 | .05 | .04* | .06 | .00 | .00 | .00 | .34 | .12 | .11 | .03* | .03 | .00 | .00 | .00 |
| | + Assertiveness | .23 | .05 | .04 | .03* | .05 | .00 | .00 | .00 | .31 | .10 | .09 | .01 | .12 | .01 | .00 | .01 |
| | + Enthusiasm | .36 | .13 | .12 | .11** | .19 | .04 | .03 | .04* | .32 | .10 | .09 | .01 | .05 | .00 | .00 | .00 |
| | + Compassion | .24 | .06 | .05 | .04* | .14 | .02 | .01 | .02 | .30 | .09 | .08 | .00 | .08 | .01 | .00 | .01 |
| | + Teamwork | .37 | .14 | .12 | .12** | .31 | .09 | .08 | .09** | .34 | .11 | .10 | .03* | .03 | .00 | .00 | .00 |
| | + Volatility | .29 | .08 | .07 | .06** | .12 | .01 | .00 | .01 | .31 | .10 | .08 | .01 | .02 | .00 | .00 | .00 |
| | + Withdrawal | .26 | .07 | .06 | .05** | .07 | .01 | .00 | .00 | .34 | .12 | .11 | .03* | .02 | .00 | .00 | .00 |
| | + Industriousness | .27 | .08 | .06 | .06** | .05 | .00 | .00 | .00 | .38 | .15 | .14 | .06** | .01 | .00 | .00 | .00 |
| | + Orderliness | .21 | .04 | .03 | .02 | .05 | .00 | .00 | .00 | .38 | .14 | .13 | .06** | .06 | .00 | .00 | .00 |
| | + Derailing Leadership | .26 | .07 | .06 | .05** | .18 | .03 | .02 | .03* | .32 | .10 | .09 | .01 | .01 | .00 | .00 | .00 |

* significant at $p < 0.05$

** significant at $p < 0.01$

Adj. $R^2$ adjusts for sample size and the number of predictors $(1 - ((1 - R^2)(N - 1) / (N - k - 1)))$

**Table 44. Hierarchical Regression Test of Moderation**

| | | Overall Performance | | | | Overall Leadership | | | | Overall Management | | | | Salary | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Predictor** | **R** | **$R^2$** | **Adj. $R^2$** | **$\Delta R^2$** | **R** | **$R^2$** | **Adj. $R^2$** | **$\Delta R^2$** | **R** | **$R^2$** | **Adj. $R^2$** | **$\Delta R^2$** | **R** | **$R^2$** | **Adj. $R^2$** | **$\Delta R^2$** |
| **Personality** | **Level** | .10 | .01 | .01 | | .04 | .00 | .00 | | .11 | .01 | .01 | | .51 | .26 | .25 | |
| df = 715 | **Intellect** | .23 | .05 | .05 | .04 | .05 | .00 | .00 | .00 | .21 | .05 | .04 | .03 | .51 | .26 | .25 | .00 |
| | **Level x Intellect** | .23 | .05 | .05 | .00 | .06 | .00 | .00 | .00 | .21 | .04 | .04 | .00 | .51 | .26 | .26 | .00 |
| | **Level** | .10 | .01 | .01 | | .05 | .00 | .00 | | .10 | .01 | .01 | | .51 | .26 | .25 | |
| | **Enthusiasm** | .29 | .08 | .08 | .07 | .15 | .02 | .02 | .02 | .10 | .01 | .01 | .00 | .51 | .26 | .25 | .00 |
| | **Level x Enthusiasm** | .30 | .09 | .08 | .00 | .16 | .02 | .02 | .00 | .11 | .01 | .01 | .00 | .51 | .26 | .25 | .00 |
| | **Level** | .10 | .01 | .01 | | .05 | .00 | .00 | | .10 | .01 | .01 | | .10 | .01 | .01 | |
| | **Compassion** | .17 | .03 | .03 | .02 | .13 | .02 | .01 | .01 | .11 | .01 | .01 | .00 | .11 | .01 | .01 | .00 |
| | **Level x Compassion** | .17 | .03 | .03 | .00 | .13 | .02 | .01 | .00 | .11 | .01 | .01 | .00 | .11 | .01 | .01 | .00 |
| **Cognitive** | **Level** | .11 | .01 | .01 | | .11 | .01 | .01 | | .06 | .00 | .00 | | .45 | .20 | .20 | |
| df = 1895 | **Watson-Glaser** | .30 | .09 | .09 | .08 | .15 | .02 | .02 | .01 | .46 | .21 | .21 | .21 | .45 | .21 | .20 | .01 |
| | **Level x Watson-Glaser** | .30 | .09 | .09 | .00 | .15 | .02 | .02 | .00 | .46 | .21 | .21 | .00 | .45 | .21 | .20 | .00 |

Adj. $R^2$ adjusts for sample size and the number of predictors $(1 - ((1 - R^2)(N - 1) /( N - k - 1)))$

Table 44 (continued)

| | | Overall Performance | | | | Overall Leadership | | | | Overall Management | | | | Salary | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Predictor** | | **R** | **$R^2$** | **Adj. $R^2$** | **$\Delta R^2$** | **R** | **$R^2$** | **Adj. $R^2$** | **$\Delta R^2$** | **R** | **$R^2$** | **Adj. $R^2$** | **$\Delta R^2$** | **R** | **$R^2$** | **Adj. $R^2$** | **$\Delta R^2$** |
| **Competencies** | **Level** | .11 | .01 | .01 | | .11 | .01 | .01 | | .06 | .00 | .00 | | .45 | .21 | .20 | |
| df = 2071 | **Consideration, Support, Person-Centered** | .20 | .04 | .04 | .03 | .25 | .06 | .06 | .05 | .06 | .00 | .00 | .00 | .45 | .21 | .21 | .01 |
| | **Level x Consideration** | .20 | .04 | .04 | .00 | .25 | .06 | .06 | .00 | .06 | .00 | .00 | .00 | .45 | .21 | .21 | .00 |
| | **Level** | .11 | .01 | .01 | | .11 | .01 | .01 | | .06 | .00 | .00 | | .45 | .20 | .20 | |
| | **Initiating Structure, Guiding, Directing** | .17 | .03 | .03 | .02 | .18 | .03 | .03 | .02 | .07 | .01 | .00 | .00 | .46 | .21 | .21 | .01 |
| | **Level x Initiating Structure** | .17 | .03 | .03 | .00 | .18 | .03 | .03 | .00 | .07 | .01 | .00 | .00 | .46 | .21 | .21 | .00 |
| | **Level** | .11 | .01 | .01 | | .11 | .01 | .01 | | .06 | .00 | .00 | | .45 | .21 | .20 | |
| | **Empowerment, Facilitation** | .20 | .04 | .04 | .03 | .23 | .05 | .05 | .04 | .07 | .01 | .00 | .00 | .46 | .21 | .21 | .01 |
| | **Level x Empowerment, Facilitation** | .20 | .04 | .04 | .00 | .23 | .05 | .05 | .00 | .07 | .01 | .00 | .00 | .46 | .21 | .21 | .00 |
| | **Level** | .11 | .01 | .01 | | .11 | .01 | .01 | | .06 | .00 | .00 | | .45 | .20 | .20 | |
| | **Training, Coaching** | .21 | .04 | .04 | .03 | .23 | .05 | .05 | .04 | .07 | .01 | .00 | .00 | .46 | .21 | .21 | .01 |
| | **Level x Training, Coaching** | .21 | .04 | .04 | .00 | .23 | .05 | .05 | .00 | .07 | .01 | .00 | .00 | .46 | .21 | .21 | .00 |
| | **Level** | .11 | .01 | .01 | | .11 | .01 | .01 | | .06 | .00 | .00 | | .45 | .21 | .20 | |
| | **Decision Making, Problem Solving** | .19 | .04 | .04 | .03 | .15 | .02 | .02 | .01 | .14 | .02 | .02 | .02 | .47 | .23 | .22 | .02 |
| | **Level x Decision Making** | .19 | .04 | .04 | .00 | .16 | .03 | .02 | .00 | .14 | .02 | .02 | .00 | .47 | .23 | .22 | .00 |
| | **Level** | .11 | .01 | .01 | | .11 | .01 | .01 | | .06 | .00 | .00 | | .45 | .21 | .20 | |
| | **Goal Setting, Planning, Organizing** | .18 | .03 | .03 | .02 | .16 | .02 | .02 | .01 | .11 | .01 | .01 | .01 | .46 | .22 | .21 | .01 |
| | **Level x Goal Setting** | .18 | .03 | .03 | .00 | .16 | .03 | .03 | **.01*** | .11 | .01 | .01 | .00 | .46 | .22 | .21 | .00 |
| | **Level** | .11 | .01 | .01 | | .11 | .01 | .01 | | .06 | .00 | .00 | | .45 | .20 | .20 | |
| | **Coordination** | .19 | .04 | .04 | .03 | .22 | .05 | .05 | .04 | .07 | .01 | .00 | .00 | .46 | .21 | .21 | .01 |
| | **Level x Coordination** | .19 | .04 | .04 | .00 | .22 | .05 | .05 | .00 | .07 | .01 | .00 | .00 | .46 | .21 | .21 | .00 |

Adj. $R^2$ adjusts for sample size and the number of predictors $(1 - ((1 - R^2)(N - 1) /( N - k - 1)))$

## Figures

**Figure 1. Personality Profiles: Mean Standard Scores across Levels**

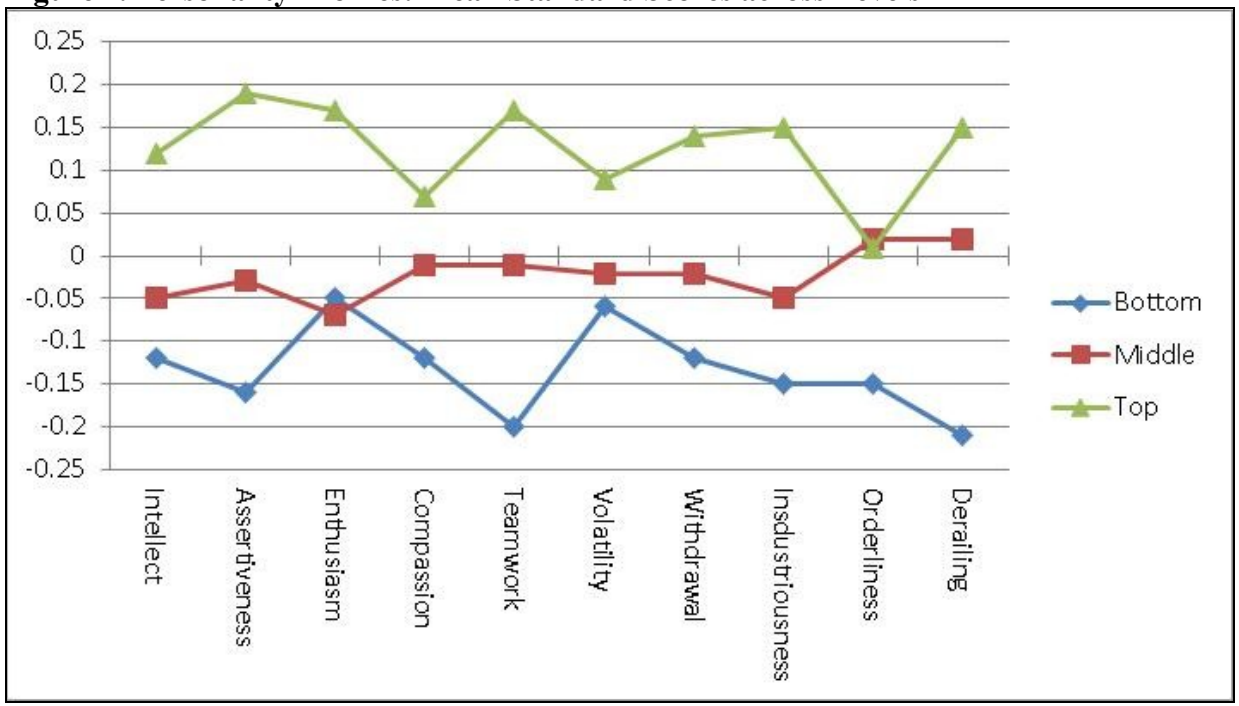


**Figure 2. Cognitive Ability Profiles: Mean Standard Scores across Levels**

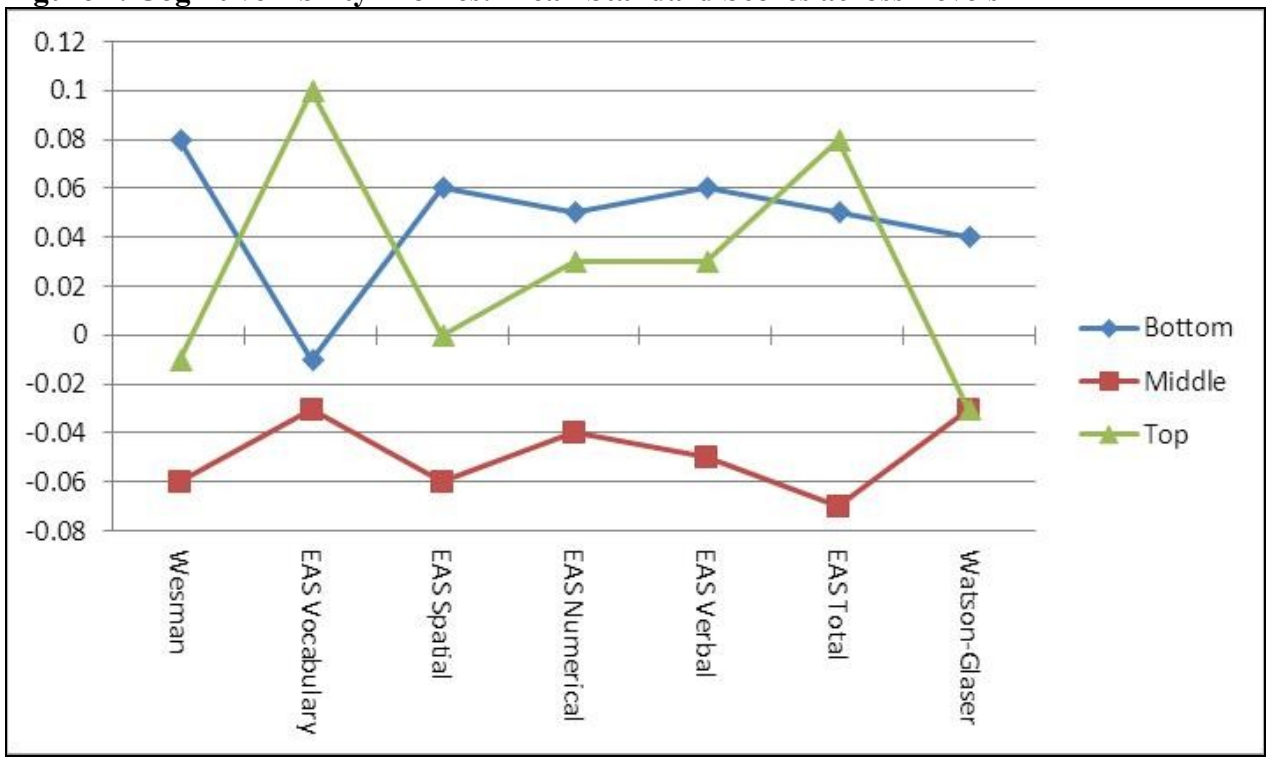


**Figure 3. Leadership Experience Inventory Profiles: Mean Standard Scores across Levels**

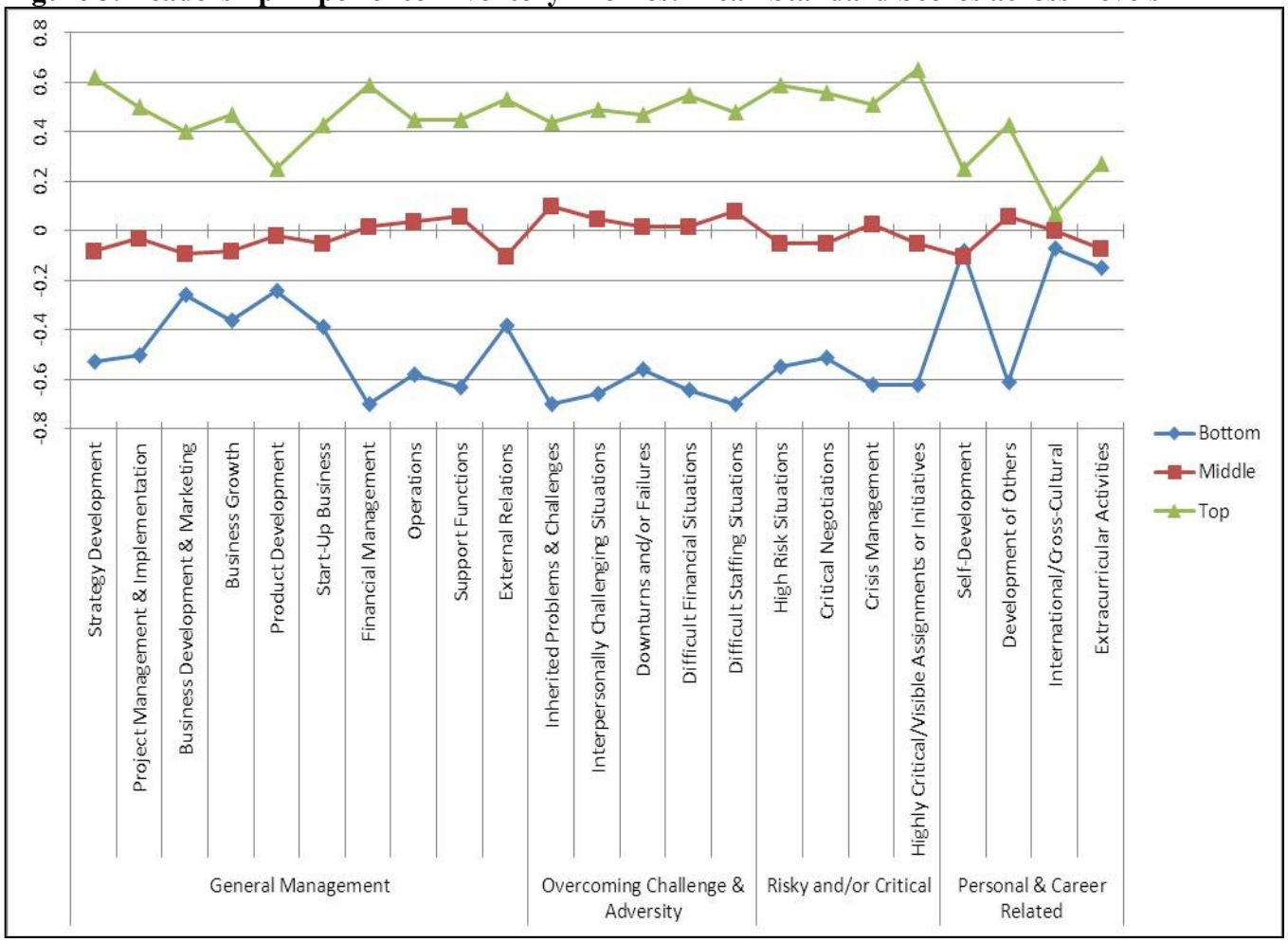


**Figure 4. PROFILOR Behavioral Competency Profiles: Mean Standard Scores across Levels**

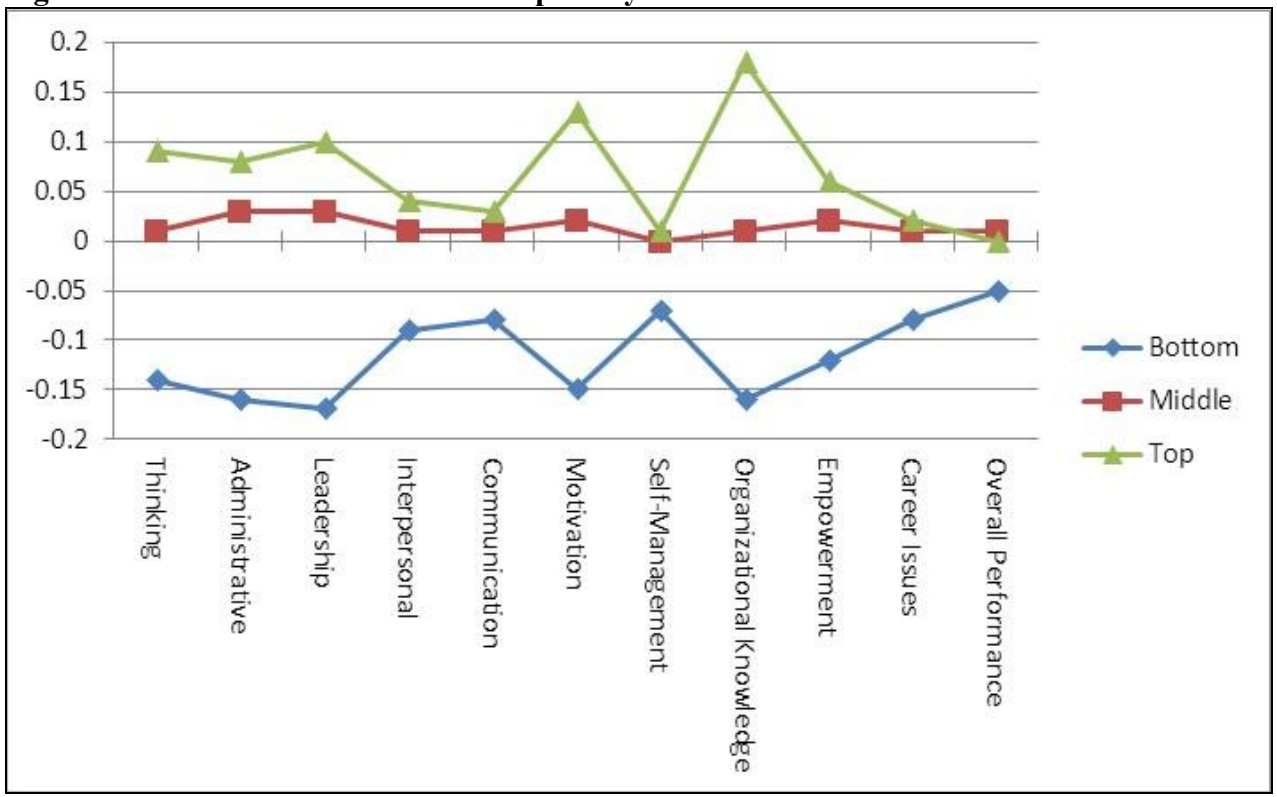


**Figure 5. Campbell Behavioral Competency Profiles: Mean Standard Scores across Levels**

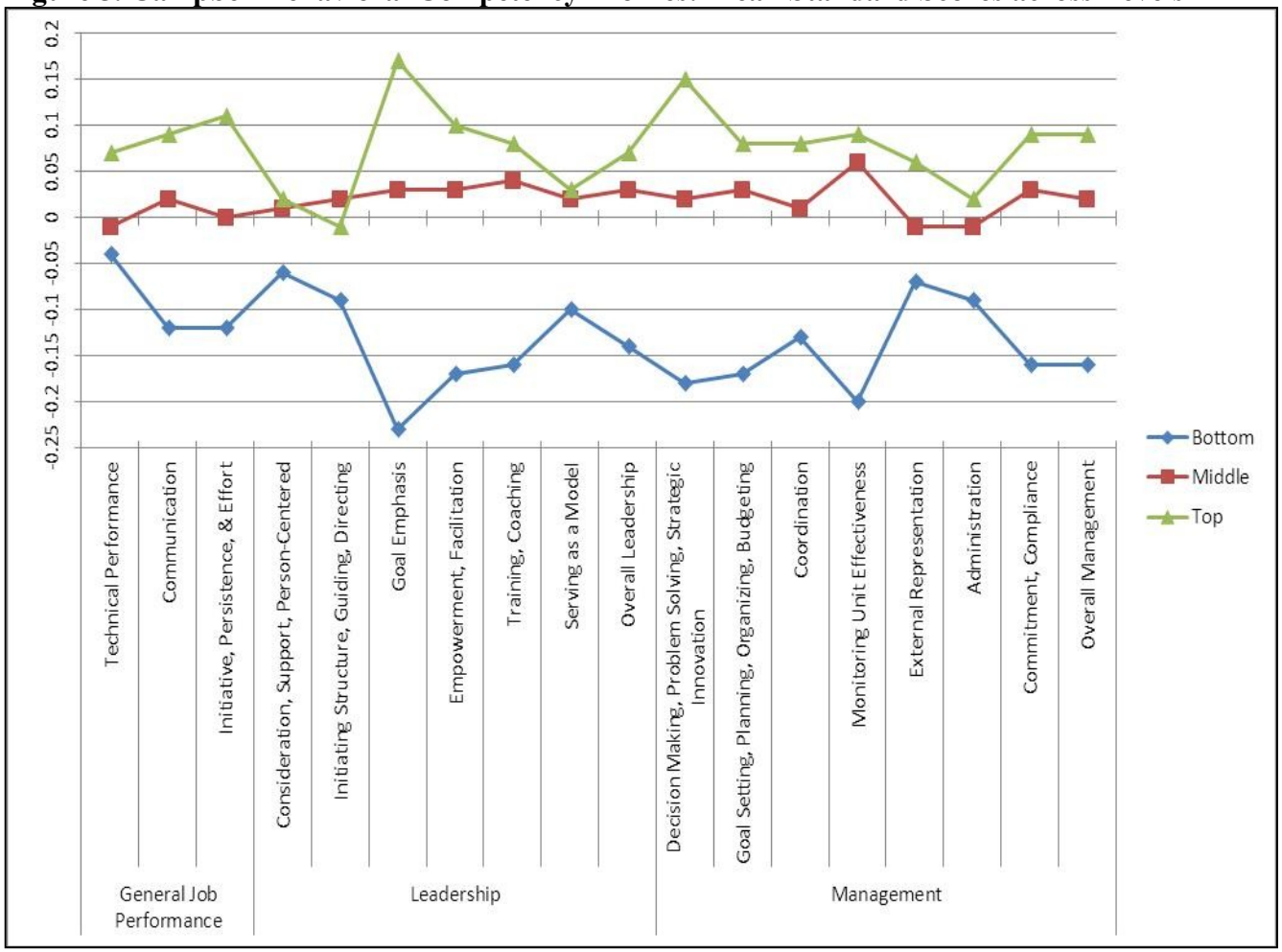
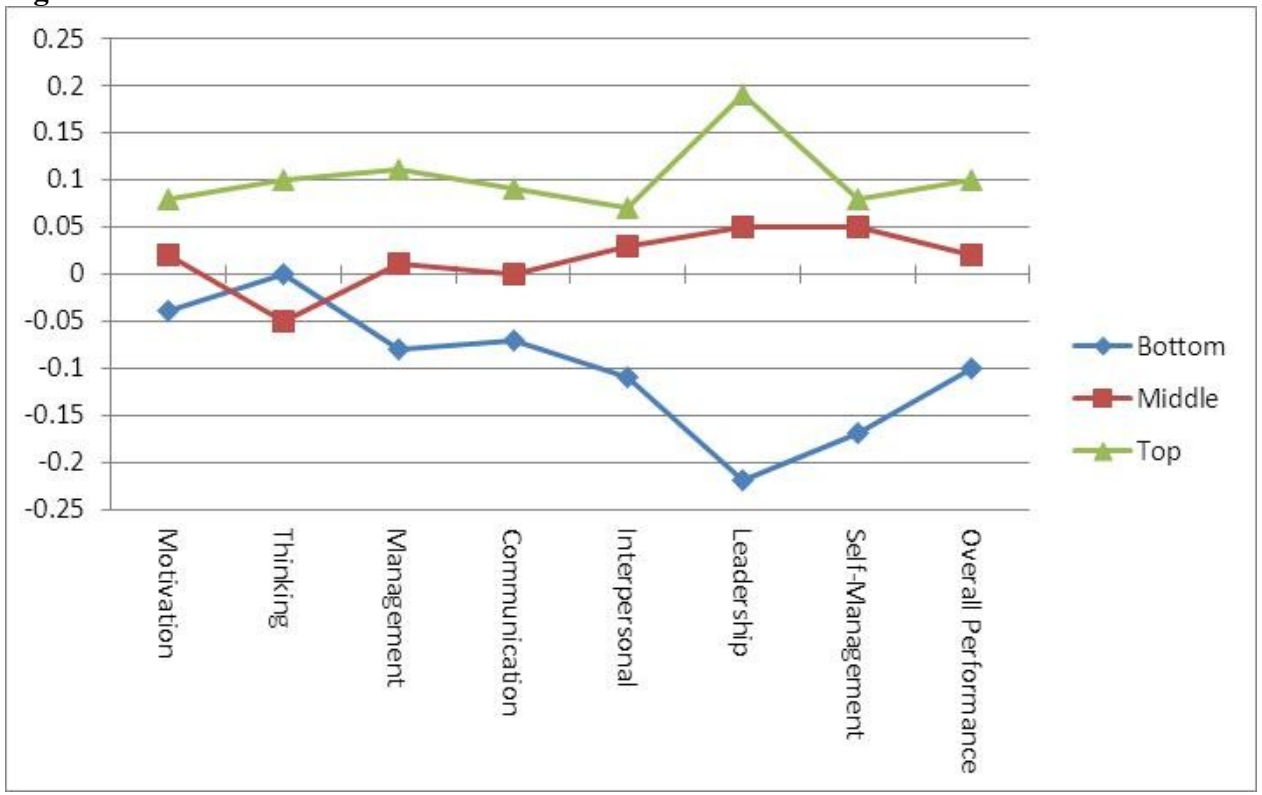


**Figure 6. Performance Profiles: Mean Standard Scores across Levels**



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## Appendices

**Appendix A**
Gender Differences in Personality

| | | **Male** N = 867 | | **Female** N = 299 | |
|---|---|---|---|---|---|
| **Personality Scale** | | **Mean** | **SD** | **Mean** | **SD** |
| Openness: | | | | | |
| | Intellect | .01 | 1.00 | -.02 | 1.01 |
| Extraversion: | | | | | |
| | Assertiveness | .01 | 1.01 | -.01 | .98 |
| | Enthusiasm | -.06** | .99 | .20** | 1.01 |
| Agreeableness: | | | | | |
| | Compassion | -.09** | .98 | .27** | 1.01 |
| | Teamwork (Politeness) | -.03 | 1.02 | .08 | .95 |
| Neuroticism: | | | | | |
| | Volatility | .04* | .99 | -.11* | 1.04 |
| | Withdrawal | .03* | 1.01 | -.10* | .98 |
| Conscientiousness: | | | | | |
| | Industriousness | -.02 | 1.01 | .07 | .97 |
| | Orderliness | -.02 | 1.01 | .05 | .97 |
| Derailing Leadership | | .01 | 1.03 | -.02 | .90 |

* significantly different at $p < 0.05$
** significantly different at $p < 0.01$

**Appendix B**
Gender Differences in Cognitive Ability

| | Male | | Female | |
|---|---|---|---|---|
| **Cognitive Ability Scale** | **Mean** | **SD** | **Mean** | **SD** |
| Wesman | .02 (N = 2293) | .99 | -.06 (N = 722) | 1.02 |
| EAS Vocabulary | .02 (N = 1105) | 1.01 | -.05 (N = 293) | .95 |
| EAS Spatial | .11** (N = 1099) | .96 | -.44** (N = 291) | 1.02 |
| EAS Numerical | .02 (N = 1168) | 1.00 | -.08 (N = 311) | 1.01 |
| EAS Verbal | -.06** (N = 1111) | .99 | .21** (N = 293) | 1.01 |
| EAS Total | .03* (N = 1095) | .99 | -.11* (N = 295) | 1.02 |
| Watson-Glaser | .01 (N = 2682) | 1.00 | -.05 (N = 806) | 1.01 |

* significantly different at $p < 0.05$
** significantly different at $p < 0.01$

**Appendix C**
Gender Differences in Experiences

| | **Male** N = 400 | | **Female** N = 117 | |
|---|---|---|---|---|
| **LEI Scales** | **Mean** | **SD** | **Mean** | **SD** |
| **General Management:** | .04 | .99 | -.13 | .99 |
| Strategy Development | .00 | 1.01 | -.07 | 1.03 |
| Project Management & Implementation | .03 | .99 | -.14 | 1.06 |
| Business Development & Marketing | .01 | 1.01 | -.10 | 1.00 |
| Business Growth | .01 | 1.01 | -.13 | 1.00 |
| Product Development | -.02 | 1.00 | .02 | 1.03 |
| Start-Up Business | .04 | 1.03 | -.14 | .93 |
| Financial Management | .03* | 1.00 | -.19* | 1.05 |
| Operations | .04* | .99 | -.21* | 1.10 |
| Support Functions | .03* | 1.01 | -.18* | 1.06 |
| External Relations | .02 | 1.00 | -.09 | 1.05 |
| **Overcoming Challenge & Adversity:** | .03 | .99 | -.11 | 1.02 |
| Inherited Problems & Challenges | -.02 | 1.01 | -.02 | 1.07 |
| Interpersonally Challenging Situations | .01 | 1.04 | -.13 | 1.03 |
| Downturns and/or Failures | .03 | 1.02 | -.16 | 1.05 |
| Difficult Financial Situations | .03 | 1.00 | -.16 | 1.06 |
| Difficult Staffing Situations | .01 | 1.02 | -.11 | 1.05 |
| **Risky and/or Critical:** | .04 | .98 | -.15 | 1.06 |
| High Risk Situations | .05* | .99 | -.19* | 1.08 |
| Critical Negotiations | .04 | 1.00 | -.14 | 1.05 |
| Crisis Management | .03 | .99 | -.14 | 1.10 |
| Highly Critical/Visible Assignments or Initiatives | .03 | .99 | -.15 | 1.08 |
| **Personal & Career Related:** | .00 | 1.00 | .00 | 1.00 |
| Self-Development | -.02 | 1.01 | .05 | 1.03 |
| Development of Others | -.03 | 1.03 | -.07 | 1.07 |
| International/Cross-Cultural | .04 | 1.04 | -.15 | .88 |
| Extracurricular Activities | -.06* | .99 | .18* | 1.05 |
| **Overall Experience:** | .04 | .99 | -.12 | 1.04 |

* significantly different at $p < 0.05$

**Appendix D**

Gender Differences across the PROFILOR Behavioral Competencies

| | **Male** N = 3302 | | **Female** N = 955 | |
|---|---|---|---|---|
| **Factor** | **Mean** | **SD** | **Mean** | **SD** |
| Thinking | .01 | 1.01 | .02 | .97 |
| Administrative | -.02** | 1.01 | .11** | .96 |
| Leadership | -.04** | 1.01 | .17** | .96 |
| Interpersonal | -.01** | 1.00 | .09** | 1.00 |
| Communication | -.05** | 1.00 | .22** | .94 |
| Motivation | -.06** | 1.01 | .25** | .90 |
| Self-Management | -.02** | 1.00 | .13** | .97 |
| Organizational Knowledge | .03** | 1.01 | -.09** | .99 |
| Empowerment | -.04** | 1.00 | .16** | .97 |
| Career Issues | -.02** | 1.00 | .10** | .98 |
| Overall Performance | -.05** | 1.00 | .20** | .96 |

** significantly different at $p < 0.01$

**Appendix E**

Gender Differences for Campbell Behavioral Competencies

| | **Male** N = 3303 | | **Female** N = 955 | |
|---|---|---|---|---|
| **Factors** | **Mean** | **SD** | **Mean** | **SD** |
| **General Job Performance:** | | | | |
| Technical Performance | .02** | 1.00 | -.08** | 1.00 |
| Communication | -.03** | 1.01 | .16** | .94 |
| Initiative, Persistence, & Effort | -.07** | 1.01 | .28** | .90 |
| **Overall Leadership:** | -.03** | 1.00 | .15** | .97 |
| Consideration, Support, Person-Centered | -.03** | 1.00 | .14** | .99 |
| Initiating Structure, Guiding, Directing | -.03** | 1.00 | .14** | .97 |
| Goal Emphasis | -.03** | 1.01 | .13** | .94 |
| Empowerment, Facilitation | -.03** | 1.00 | .12** | .98 |
| Training, Coaching | -.05** | 1.00 | .19** | .98 |
| Serving as a Model | -.02** | 1.00 | .13** | .98 |
| **Overall Management:** | -.03** | 1.01 | .14** | .95 |
| Decision Making, Problem Solving, Strategic Innovation | .01 | 1.01 | -.01 | .97 |
| Goal Setting, Planning, Organizing, Budgeting | -.03** | 1.01 | .13** | .96 |
| Coordination | -.03** | 1.06 | .14** | 1.03 |
| Monitoring Unit Effectiveness | -.03** | 1.01 | .13** | .95 |
| External Representation | .00 | 1.01 | .05 | .96 |
| Administration | -.05** | 1.01 | .24** | .93 |
| Commitment, Compliance | -.03** | 1.01 | .14** | .95 |

** significantly different at $p < 0.01$

**Appendix F**

Gender Differences in Assessment Center Performance Factors

| | **Male** N = 1683 | | **Female** N = 492 | |
|---|---|---|---|---|
| **Factors** | **Mean** | **SD** | **Mean** | **SD** |
| Motivation | -.03* | 1.01 | .08* | .92 |
| Thinking | -.01 | 1.00 | .02 | .96 |
| Management | -.04** | .98 | .10** | 1.00 |
| Communication | -.07** | .99 | .23** | .98 |
| Interpersonal | -.03** | 1.02 | .11** | .91 |
| Leadership | -.01 | 1.01 | .02 | .93 |
| Self-Management | -.01 | 1.00 | .04 | .99 |
| Overall Management Performance | -.03* | .99 | .07* | .98 |
| Overall Leadership Performance | -.05** | 1.01 | .14** | .92 |
| Overall Performance | -.03** | .64 | .08** | .59 |

* significantly different at $p < 0.05$

** significantly different at $p < 0.01$

## Appendix G

Bottom Level Individual Difference Correlations with Campbell Behavioral Competencies

| | PROFILOR Overall Performance | Technical Performance | Communication | Initiative, Persistence, & Effort | Consideration, Support, Person-Centered | Initiating Structure, Guiding, Directing | Goal Emphasis | Empowerment, Facilitation | Training, Coaching | Serving as a Model | Decision Making, Problem Solving, Strategic Innovation | Goal Setting, Planning, Organizing, Budgeting | Coordination | Monitoring Unit Effectiveness | External Representation | Administration | Commitment, Compliance |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Personality (N=207)** | | | | | | | | | | | | | | | | | |
| **Intellect** | -.03 | .12 | .00 | -.02 | -.09 | -.06 | .00 | -.07 | -.09 | -.03 | .06 | -.03 | -.03 | -.08 | .00 | -.05 | -.03 |
| **Assertive** | .03 | .02 | -.01 | .09 | -.08 | -.04 | .07 | -.08 | -.05 | .00 | .01 | -.05 | -.06 | .03 | -.01 | -.06 | -.08 |
| **Enthusiasm** | -.10 | -.07 | -.02 | .07 | -.04 | -.09 | .00 | -.08 | -.08 | -.04 | -.09 | -.16* | -.10 | -.04 | -.11 | -.09 | -.15* |
| **Compassion** | -.03 | -.05 | .10 | .05 | .14* | .01 | .06 | .06 | .05 | .09 | -.01 | -.02 | .08 | -.03 | .02 | .03 | .04 |
| **Teamwork** | .02 | .03 | -.03 | .07 | .09 | .10 | .12 | .13 | .11 | .07 | .07 | .10 | .11 | .08 | .05 | .06 | .07 |
| **Volatility** | .03 | .11 | .06 | -.13 | .09 | .04 | .01 | .06 | -.02 | .11 | .08 | .02 | .07 | -.08 | .13 | -.04 | .05 |
| **Withdrawal** | .07 | .04 | .00 | .07 | .13 | .13 | .11 | .12 | .10 | .10 | .02 | .06 | .12 | .08 | .08 | .08 | .05 |
| **Industriousness** | .11 | .02 | -.04 | .16* | -.02 | .04 | .11 | -.03 | -.03 | .05 | .04 | .04 | .00 | .07 | .01 | .00 | -.03 |
| **Orderliness** | .01 | .04 | -.06 | .19** | .06 | .13 | .16* | .04 | .06 | .11 | .05 | .16* | .10 | .15* | .10 | .07 | .09 |
| **Derailing Leadership** | -.04 | -.01 | -.01 | .00 | .00 | .04 | .06 | .05 | .03 | .00 | -.02 | .03 | .00 | .08 | -.05 | .01 | .02 |

* significant at $p < 0.05$

** significant at $p < 0.01$

Appendix Table G (continued)

| | PROFILOR Overall Performance | Technical Performance | Communication | Initiative, Persistence, & Effort | Consideration, Support, Person-Centered | Initiating Structure, Guiding, Directing | Goal Emphasis | Empowerment, Facilitation | Training, Coaching | Serving as a Model | Decision Making, Problem Solving, Strategic Innovation | Goal Setting, Planning, Organizing, Budgeting | Coordination | Monitoring Unit Effectiveness | External Representation | Administration | Commitment, Compliance |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Cognitive Ability** | | | | | | | | | | | | | | | | | |
| **Wesman (N = 718)** | .02 | .13** | .09* | .03 | -.01 | -.02 | .00 | .01 | .01 | .03 | .14** | .01 | .02 | -.09* | .04 | .03 | .08 |
| **EAS Vocab (N = 412)** | -.10* | .01 | .01 | -.07 | -.06 | -.14** | -.11* | -.05 | -.04 | -.07 | .03 | -.11* | -.11* | -.17** | -.07 | -.09 | -.03 |
| **EAS Spatial (N = 412)** | .05 | .06 | .00 | -.03 | .02 | .00 | -.02 | .03 | .02 | .04 | .08 | .01 | .03 | -.06 | .07 | -.01 | -.01 |
| **EAS Numerical (N = 429)** | .06 | .09 | .04 | .02 | -.01 | .02 | -.01 | -.01 | -.01 | .04 | .11* | .04 | .02 | -.03 | .06 | .03 | .06 |
| **EAS Verbal (N = 413)** | .12* | .11* | .16** | .11* | .06 | .08 | .07 | .05 | .08 | .10* | .18** | .08 | .08 | .02 | .11* | .05 | .13* |
| **EAS Total (N = 412)** | .03 | .09 | .07 | .00 | .00 | -.03 | -.04 | .00 | .01 | .02 | .12* | -.02 | -.01 | -.10 | .05 | -.03 | .04 |
| **Watson-Glaser (N = 817)** | .07* | .14** | .12** | .05 | .04 | .05 | .04 | .05 | .04 | .08* | .16** | .07 | .08* | -.05 | .11** | .05 | .09* |

* significant at $p < 0.05$
** significant at $p < 0.01$

**Appendix H**

Middle Level Individual Difference Correlations with Campbell Behavioral Competencies

| | PROFILOR Overall Performance | Technical Performance | Communication | Initiative, Persistence, & Effort | Consideration, Support, Person-Centered | Initiating Structure, Guiding, Directing | Goal Emphasis | Empowerment, Facilitation | Training, Coaching | Serving as a Model | Decision Making, Problem Solving, Strategic Innovation | Goal Setting, Planning, Organizing, Budgeting | Coordination | Monitoring Unit Effectiveness | External Representation | Administration | Commitment, Compliance |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Personality (N=577)** | | | | | | | | | | | | | | | | | |
| **Intellect** | .12** | .16** | .06 | .19** | .07 | .10* | .12** | .11** | .16** | .10** | .19** | .15** | .06 | .06 | .10* | .05 | .04 |
| **Assertive** | .17** | .05 | .13** | .24** | .14** | .19** | .23** | .20** | .26** | .18** | .19** | .21** | .14** | .23** | .08* | .16** | .10* |
| **Enthusiasm** | .03 | .00 | .09* | .21** | .11** | .07 | .14** | .12** | .18** | .11** | .09* | .06 | .09* | .10* | .00 | .09* | .00 |
| **Compassion** | .03 | -.08 | .08 | .12** | .26** | .11* | .10* | .19** | .19** | .19** | .04 | .04 | .16** | .05 | .08 | .11** | .10* |
| **Teamwork** | .08 | .01 | .08 | .15** | .13** | .12** | .13** | .16** | .20** | .10* | .07 | .11** | .11** | .11** | .07 | .15** | .08 |
| **Volatility** | .02 | .02 | .04 | .00 | .10* | .08* | .07 | .10* | .13** | .12** | .10* | .07 | .08 | .01 | .05 | .05 | .08 |
| **Withdrawal** | .13** | .02 | .11** | .13** | .22** | .19** | .17** | .21** | .24** | .19** | .14** | .15** | .17** | .17** | .10* | .17** | .15** |
| **Industriousness** | .21** | .07 | .06 | .23** | .04 | .16** | .18** | .09* | .17** | .12** | .17** | .21** | .06 | .21** | .04 | .14** | .08 |
| **Orderliness** | .23** | .05 | .07 | .13** | .13** | .20** | .17** | .13** | .17** | .15** | .11** | .22** | .14** | .21** | .10* | .17** | .18** |
| **Derailing Leadership** | -.04 | -.05 | .04 | .01 | .08 | .01 | .03 | .05 | .07 | .03 | .02 | -.01 | .02 | -.02 | -.01 | .03 | .04 |

* significant at $p < 0.05$

** significant at $p < 0.01$

Appendix Table H (continued)

| | PROFILOR Overall Performance | Technical Performance | Communication | Initiative, Persistence, & Effort | Consideration, Support, Person-Centered | Initiating Structure, Guiding, Directing | Goal Emphasis | Empowerment, Facilitation | Training, Coaching | Serving as a Model | Decision Making, Problem Solving, Strategic Innovation | Goal Setting, Planning, Organizing, Budgeting | Coordination | Monitoring Unit Effectiveness | External Representation | Administration | Commitment, Compliance |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Cognitive Ability** | | | | | | | | | | | | | | | | | |
| **Wesman (N = 1402)** | -.07** | .04 | .02 | -.08** | -.05 | -.08** | -.09** | -.04 | -.08** | -.05 | .04 | -.06* | -.06* | -.18** | .01 | -.07* | -.07* |
| **EAS Vocab (N = 615)** | -.06 | .06 | .01 | -.07 | -.03 | -.07 | -.05 | -.01 | -.05 | -.05 | .05 | -.04 | -.04 | -.15** | .00 | .00 | -.04 |
| **EAS Spatial (N = 615)** | -.02 | .01 | .02 | -.03 | -.05 | -.04 | -.04 | -.02 | -.04 | -.03 | .03 | -.02 | -.03 | -.10* | -.01 | -.04 | -.01 |
| **EAS Numerical (N = 654)** | -.02 | .02 | .04 | -.03 | -.03 | -.05 | -.07 | -.01 | -.04 | -.02 | .04 | -.03 | -.02 | -.12** | .01 | -.03 | .01 |
| **EAS Verbal (N = 620)** | .07 | .14** | .14** | .07 | .01 | .03 | .07 | .06 | .08* | .07 | .18** | .09* | .07 | .00 | .12** | .02 | .05 |
| **EAS Total (N = 613)** | -.02 | .08 | .08* | -.04 | -.02 | -.04 | -.03 | .02 | -.01 | -.01 | .10* | .00 | .00 | -.14** | .05 | .00 | .01 |
| **Watson-Glaser (N = 1600)** | -.01 | .06* | .07** | .00 | -.02 | -.04 | -.04 | -.01 | -.05 | .00 | .08** | -.02 | -.01 | -.15** | .04 | -.04 | -.03 |

* significant at $p < 0.05$
** significant at $p < 0.01$

## Appendix I

Top Level Individual Difference Correlations with Campbell Behavioral Competencies

| | PROFILOR Overall Performance | Technical Performance | Communication | Initiative, Persistence, & Effort | Consideration, Support, Person-Centered | Initiating Structure, Guiding, Directing | Goal Emphasis | Empowerment, Facilitation | Training, Coaching | Serving as a Model | Decision Making, Problem Solving, Strategic Innovation | Goal Setting, Planning, Organizing, Budgeting | Coordination | Monitoring Unit Effectiveness | External Representation | Administration | Commitment, Compliance |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Personality (N=255)** | | | | | | | | | | | | | | | | | |
| **Intellect** | -.04 | .06 | -.06 | .01 | -.13* | -.08 | -.02 | -.05 | -.03 | -.09 | .00 | -.02 | -.09 | -.04 | -.10 | -.08 | -.11 |
| **Assertive** | .01 | .01 | .08 | .10 | -.06 | -.02 | .05 | .00 | .06 | -.03 | .05 | .01 | -.04 | .07 | -.03 | -.04 | -.11 |
| **Enthusiasm** | -.08 | -.05 | .02 | .11 | -.02 | -.07 | -.02 | -.01 | .00 | -.04 | -.03 | -.07 | -.03 | -.01 | -.10 | -.09 | -.14* |
| **Compassion** | -.08 | -.18** | -.03 | .01 | .12 | -.03 | -.08 | .07 | .05 | -.02 | -.13* | -.10 | .03 | -.08 | -.07 | .00 | -.05 |
| **Teamwork** | -.01 | -.14* | -.01 | .01 | .12 | .06 | .02 | .10 | .09 | .05 | -.10 | .00 | .10 | .08 | .03 | .05 | .05 |
| **Volatility** | -.10 | -.02 | -.03 | -.05 | .02 | -.06 | -.06 | .02 | -.02 | .02 | .00 | -.07 | .04 | -.10 | .00 | -.05 | -.04 |
| **Withdrawal** | .03 | -.05 | .04 | .06 | .13* | .11 | .05 | .12 | .08 | .10 | .00 | .04 | .12 | .05 | .08 | .09 | .07 |
| **Industriousness** | .04 | .06 | .14* | .09 | -.08 | .04 | .11 | -.02 | .03 | .00 | .07 | .05 | .00 | .07 | -.04 | -.01 | -.06 |
| **Orderliness** | .07 | -.07 | -.02 | .01 | .02 | .12* | .04 | .04 | .05 | .03 | -.08 | .08 | .04 | .15* | .00 | .12 | .06 |
| **Derailing Leadership** | .02 | -.09 | .05 | .02 | .20** | .15* | .07 | .17** | .10 | .12 | .00 | .06 | .16* | .07 | .08 | .16* | .09 |

* significant at $p < 0.05$

** significant at $p < 0.01$

Appendix Table I (continued)

| | PROFILOR Overall Performance | Technical Performance | Communication | Initiative, Persistence, & Effort | Consideration, Support, Person-Centered | Initiating Structure, Guiding, Directing | Goal Emphasis | Empowerment, Facilitation | Training, Coaching | Serving as a Model | Decision Making, Problem Solving, Strategic Innovation | Goal Setting, Planning, Organizing, Budgeting | Coordination | Monitoring Unit Effectiveness | External Representation | Administration | Commitment, Compliance |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Cognitive Ability** | | | | | | | | | | | | | | | | | |
| **Wesman (N = 605)** | -.07 | .13** | .11** | -.07 | .00 | -.05 | -.06 | .00 | -.05 | .01 | .12** | -.03 | .02 | -.18** | .04 | -.02 | .02 |
| **EAS Vocab (N = 230)** | -.01 | .28** | .22** | .00 | .11 | .03 | .04 | .10 | .08 | .10 | .23** | .05 | .14* | -.17* | .18** | .07 | .15* |
| **EAS Spatial (N = 223)** | .07 | .22** | .13 | .08 | .06 | .06 | .06 | .05 | .05 | .09 | .17* | .08 | .06 | -.09 | .06 | .01 | .09 |
| **EAS Numerical (N = 254)** | .11 | .08 | .15* | .06 | .09 | .13* | .10 | .12* | .10 | .10 | .17** | .14* | .10 | -.05 | .13* | .08 | .04 |
| **EAS Verbal (N = 230)** | .07 | .17* | .18** | .02 | .12 | .07 | .06 | .12 | .08 | .10 | .19** | .09 | .12 | -.12 | .13* | .08 | .12 |
| **EAS Total (N = 224)** | .07 | .28** | .24** | .04 | .15* | .11 | .08 | .15* | .12 | .14* | .27** | .11 | .15* | -.16* | .19** | .09 | .15* |
| **Watson-Glaser (N = 651)** | -.03 | .05 | .09* | .01 | .00 | -.03 | -.02 | .00 | -.02 | .02 | .11** | .01 | .03 | -.12** | .02 | -.02 | .04 |

* significant at $p < 0.05$
** significant at $p < 0.01$